

# THE MEDICAL JOURNAL OF AUSTRALIA

JUN 21 1929



VOL. I.—16TH YEAR.

SYDNEY, SATURDAY, MAY 25, 1929.

No. 21.

## INSULIN 'A.B.'

TRADE MARK  Brand

### REDUCTION IN PRICES

Improved methods and large scale production have made possible further substantial reductions in prices. The new prices are:

Vials containing 5 c.c.  
 100 units . . . . 2/6 each  
 200 units . . . . 5/- each

Insulin "A.B." Brand may be relied upon for—  
 Uniformity of unit strength;  
 Full potency and stability;  
 Highest purity and complete sterility;  
 Absence of reaction-producing proteins with consequent freedom from unpleasant by-effects.

The activity of "A.B." Insulin is guaranteed by the most complete physiological tests and standardization on the basis of the accepted unit. Before issue, each batch is passed under the authority of the Medical Research Council of Great Britain.

*Copies of the new edition of "Practical Notes on Insulin Therapy" will be sent to physicians on request.*

Joint Licensees and Manufacturers:

**ALLEN & HANBURY LTD.,**  
 London.

**THE BRITISH DRUG HOUSES LTD.,**  
 London.

Representatives in Australia:

**ALLEN & HANBURY (A/SIA) LTD.,**  
 13, Market Street and 34, Elizabeth Street, Sydney.

**G. J. WOOD,**  
 National Building, 250, Pitt Street, Sydney.





## COLOMBO

# P. & O.

EUROPEAN Progress touches Ceylon yet leaves it still primitive and picturesque—the symbol of Adventure.

Behind the wide roads of civilization are jungles and ancient temples, colorful native bazaar, lost Cities of Oriental splendour.

Calling first at Colombo, then Aden, Suez, Port Said and Marseilles, the London-bound liner weaves a World of New Adventure for the traveller by P. & O.

Rates, Sailings and Literature from  
MACDONALD, HAMILTON & CO.  
247 GEORGE STREET - - - SYDNEY



# THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—16TH YEAR.

SYDNEY, SATURDAY, MAY 25, 1929.

No. 21.

Authors of articles submitted for publication are requested to read the following instructions and to comply with them.

All articles must be typed with double or treble spacing. Carbon copies should not be sent. Abbreviations should be avoided, especially those of a technical character at times employed in ward notes. Words and sentences should not be underlined or typed in capitals. The selection of the correct type is undertaken by the Editors. When illustrations are required, good photographic prints on glossy gaslight papers should be submitted. Each print should be enclosed in a sheet of paper. On this sheet of paper the number of the figure and

the legend to appear below the print should be typed or legibly written. On no account should any mark be made on the back of the photographic print. If no good print is available, negatives may be submitted. Line drawings, graphs, charts and the like should be drawn on thick, white paper in India ink by a person accustomed to draw for reproduction. The drawings should be large and boldly executed and all figures, lettering and symbols should be of sufficient strength and size to remain clear after reduction. Skiagrams can be reproduced satisfactorily only if good prints or negatives are available. The reproduction of all illustrations but especially of skiagrams entails the sacrifice of

time and energy and is expensive. Authors are expected to take a corresponding amount of trouble on the preparation of their illustrations, whether skiagrams, photographs, wash drawings or line drawings. The references to articles and books quoted must be accurate and should be compiled according to the following scheme. The order should correspond to the order of appearance in the article. The initials and surnames of the authors, the full title of the article or book, the full (unabbreviated) title of the journal in which the article appears, the date of the issue (day, month and year) and the number of the first page should be given in this sequence.

## Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	PAGE.	ABSTRACTS FROM CURRENT MEDICAL LITERATURE—	PAGE.
"Diabetes Mellitus and Its Treatment," by JAMES R. BELL, M.D., M.R.C.P. . . . .	688	Dermatology . . . . .	710
"The Effect of Blood Transfusion on Blood Regeneration," by J. V. DUHIG, M.B. . . . .	697	Urology . . . . .	710
"Vinca Rosea: Its Effect on the Blood Sugar Level of Normal Rabbits," by DOUGLAS H. K. LEE, M.Sc., and W. R. M. DREW . . . . .	699	<b>OBITUARY—</b>	
"An Intratracheal Ether Apparatus," by GEOFFREY KAYE, M.D. . . . .	701	George Adlington Syme . . . . .	712
<b>REPORTS OF CASES—</b>		John Francis Walton . . . . .	721
"Aortic Disease," by L. W. DUNLOP, M.B., and G. E. HOBSON, M.B., Ch.M. . . . .	703	<b>BRITISH MEDICAL ASSOCIATION NEWS—</b>	
"Hydatid of the Liver of Many Years' Duration," by H. I. HOLMES, M.D., F.C.S.A. . . . .	704	Scientific . . . . .	721
"Preparalytic Pollomyelitis," by MOSTYN POWELL, M.B., B.S., and ALLAN GAVAN DUFFY, M.B., B.S. 704		Nominations and Elections . . . . .	725
<b>REVIEWS—</b>		<b>CONGRESS NOTES—</b>	
The Therapeutic Use of Ultra-Violet Light . . . .	705	Australasian Medical Congress (British Medical Association) . . . . .	725
William Harvey . . . . .	705	<b>PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—</b>	
Encephalitis Lethargica . . . . .	706	Victoria . . . . .	725
Fractures and Dislocations . . . . .	706	<b>BOOKS RECEIVED . . . . .</b>	726
<b>LEADING ARTICLES—</b>		<b>DIARY FOR THE MONTH . . . . .</b>	726
False Income Tax Returns . . . . .	707	<b>MEDICAL APPOINTMENTS . . . . .</b>	726
<b>CURRENT COMMENT—</b>		<b>MEDICAL APPOINTMENTS VACANT, ETC. . . . .</b>	726
Hæmochromatosis . . . . .	708	<b>MEDICAL APPOINTMENTS: IMPORTANT NOTICE</b>	726
Dr. Roberta H. M. Jull . . . . .	709	<b>EDITORIAL NOTICES . . . . .</b>	726

DIABETES MELLITUS AND ITS TREATMENT.<sup>1</sup>

By JAMES R. BELL, M.D. (Melbourne), M.R.C.P. (London),  
Physician to Out-Patients, Alfred Hospital, Melbourne.

To Aretaeus, the Grecian anatomist and physician who died in A.D. 90, we owe the term diabetes. He first used it to denote a disease characterized by "a melting down of the flesh into urine." Sixteen centuries later, Willis, an English physician, observed that the urine tasted "wonderfully sweet, as if containing honey or sugar," in certain of these cases and in others it tasted "insipid," thus making the distinction between *diabetes mellitus* and *diabetes insipidus*. That this sweetness is due to sugar was established by Dobson in 1776 and he actually obtained a cake of sugar weighing over four ounces by evaporating a large amount of a patient's urine. He also noticed that the blood serum of these patients had a sweet taste and in 1849 Claude Bernard, the French physiologist, demonstrated that the blood in certain forms of glycosuria contained an excess of sugar.

With these facts as a basis, together with the well known clinical signs and symptoms, various theories were advanced to explain the origin of *diabetes mellitus*. The experimental work on animals of von Mering and Minkowski, published in 1889, focused attention on the pancreas and its essential relationship to the disease. During the next thirty years many unsuccessful attempts were made to isolate the active principle of the pancreatic islets of Langerhans until Banting, of Toronto, with whom were associated Best and Macleod, succeeded in 1921. They called the substance obtained "Insulin," this name having been suggested some years before by Schafer, of Edinburgh, for the then hypothetical secretion of the islets of Langerhans. This discovery ranks with that of "Salvarsan" in magnitude and therapeutic importance.

The treatment of diabetes passed through many phases, both medicinal and dietetic, until it was revolutionized by Allen in 1915. From experiments on dogs he established the value of undernutrition maintenance diets after preliminary starvation and the results he obtained were infinitely better than with any of the various preceding systems. He also recognized the harm resulting from excessive protein intake and that "fat unbalanced by adequate quantities of other foods is a poison."

Then came Newburgh and Marsh with their iconoclastic views, supported by practical results, regarding high fat, low carbohydrate and very low protein diets. The era of the "balanced" diet was at hand and Shaffer, Woodyatt, Wilder and others devised various schemes and formulæ to determine the relative amounts of carbohydrate, protein and fat that could be given safely. Shaffer's further studies have established the correctness of the claims made by Newburgh and Marsh. Medicinal therapy

fell into disrepute, especially when it became obvious that it simply masked the symptoms, without producing any real improvement in the patient's condition.

The lot of the diabetic was still an unenviable one and all too frequently a mere existence until the advent of "Insulin." Then the whole outlook was changed; the invalid was transformed into an active and useful member of society, the moribund coma patient was miraculously restored, the special dangers of surgical procedures and intercurrent infections were controlled and the future of the diabetic child could be regarded with hope instead of despair.

## PRINCIPLES OF TREATMENT.

If diabetes is due, as seems probable, to inadequate functioning of an inherently weak pancreas, the less strain placed on this organ the better. The burden of the pancreas should be lightened in every way compatible with the patient's bodily requirements, just as an over-taxed heart is spared as far as possible.

According to Wilder a satisfactory diet should theoretically embody four principles—total dietary restriction, protein restriction, carbohydrate restriction, balanced fat and carbohydrate.

## Total Dietary Restriction.

The beneficial result of total dietary restriction has been shown by Allen, Joslin and others. It was also demonstrated in Berlin during the Great War when the incidence of diabetes was greatly lessened and the progress of many diabetic patients markedly improved by the forced food restrictions. The main effect is to lower the basal metabolic rate of the patient; the various tissues of the body are consequently much less extravagant and the work of the pancreas correspondingly lightened. Lusk found that an equal reduction in basal metabolism could be obtained with less extreme measures than starvation, namely by means of a "basal maintenance diet" containing little readily absorbable carbohydrate.

## Protein Restriction.

Protein restriction is indicated for three reasons.

1. Ingestion of protein throws a large amount of sugar on the metabolism, 58% of the protein molecule being converted into glucose by the body. It is most important to appreciate this, for therein lies the explanation of the fact that many diabetics would not become sugar-free when only carbohydrate was restricted and unlimited protein allowed.

2. The relatively high "specific dynamic action" of protein causes an undesirable raising of the basal metabolic rate. This is often an advantage in the normal dietary and in the treatment of certain disordered states of the body—it speeds up the body machinery—but this is to be particularly avoided in diabetes.

3. Protein exerts a specifically depressant effect on the ability of the body to use glucose and this is

<sup>1</sup>A post-graduate lecture delivered before the Tasmanian Branch of the British Medical Association at Hobart on February 22, 1929.

obviously harmful to the diabetic. Newburgh and Marsh realized the importance of protein restriction in their dietary schemes and used even less than Joslin who advocated one gramme of protein per kilogram of the patient's body weight.

#### Carbohydrate Restriction.

As diabetes is a condition in which the body is unable to metabolize sugar completely and store it as glycogen, it is obvious that carbohydrate intake must be lessened. In the pre-"Insulin" days, this restriction of carbohydrate was sometimes of necessity extreme and the patient either existed on what was practically a starvation diet or decided that the cure was more intolerable than the disease.

In general it is still considered wise to keep the carbohydrate within reasonable bounds, despite the fact that with sufficiently large doses of "Insulin" it is possible to allow some diabetic patients a normal amount of carbohydrate. "Insulin" should never be the means for indulging in a carbohydrate orgy. Very few diabetic patients should be given more than 50 grammes of carbohydrate *per diem*, although I occasionally allow children a little more.

Geyelin and more recently Sansum, Priesel and Wagner have advocated diets with a relatively high carbohydrate and relatively low fat content, in association with "Insulin." Sansum gives not less than two parts of carbohydrate for each part of fat, while Priesel and Wagner allow three times as much carbohydrate as fat. These principles have not as yet met with the general approval of competent authorities.

#### Balanced Fat and Carbohydrate (Ketogenic and Antiketogenic Materials).

The restriction of carbohydrate and the increase of fat cannot be continued indefinitely, otherwise a condition of acidosis and later coma may result. You are all familiar with Rosenfeld's phrase, "the fats burn in the fire of the carbohydrate." Acidosis results from incomplete oxidation of the fatty acid portion of the fat molecule. Two fatty acid molecules require one molecule of glucose for complete oxidation according to Shaffer's latest researches. The work of Shaffer has led to the establishment of certain formulæ for the proper balancing of the ketogenic and antiketogenic constituents of the diet.

The  $\frac{K}{G}$  (ketogenic) ratio must not exceed 2:1;  
G (antiketogenic)

in fact it is wise to leave a safe margin. Wilder has devised the following formula, based on a ratio of 1.65:1, which he considers about the best in practice:

$$F = 4C + 1.4P$$

By this formula, if the carbohydrate of the diet is 30 grammes and the protein 60 grammes, the fat should not exceed 204 grammes. To facilitate and simplify the calculation of suitable diets Boothby, Sandiford and Wilder have constructed "nomo-

graphic charts"<sup>1</sup> based on the Dubois standards for surface area of the body rather than on the weight of the patient alone.

#### CLASSIFICATION OF FOODS.

A brief consideration of foods, their energy value and composition, is necessary in order that the principles of dietetic treatment may be properly understood.

Food is converted by the body into heat and energy, this being measured in terms of calories. Between 1,200 and 3,000 calories are expended each day, depending on the amount of work performed and on the size of the body. An average uncontrolled normal diet contains approximately 300 grammes of carbohydrate, 150 grammes of protein and 90 grammes of fat; giving a total of 2,600 calories. This diet includes a great amount of carbohydrate, probably more than is desirable even for perfectly normal persons. The dietary in diabetes must derive more of its calories from fat and less from the carbohydrate and protein. If the intake of food calories is insufficient to satisfy the demands that exist for energy, or if the food taken cannot be completely utilized (as in diabetes), certain reserves of food substances in the body and even the tissues of the body will be metabolized.

The percentage composition of various foods has been determined and in Table I are classified some of the foods in common use, according to their carbohydrate, protein and fat content. It is adapted from Joslin's list with certain alterations and additions. The vegetables classified under the heading of 5% carbohydrate are to be reckoned on an average as 3%. This is done because they lose part of their carbohydrate whilst cooking and many will lose it all if the water be changed three times; moreover, some contain only 1% to 3% when raw, but as an additional safeguard they are also computed as 3%. Similarly, the 10% vegetables are calculated as 6%, but the 15% and 20% groups and all fruits (both raw and cooked) must be estimated at their full value. It is obvious that the composition of many individual foods will vary somewhat according to climatic conditions, degree of ripeness and other factors. For example, varieties of grapes differ considerably in the amount of sugar they contain, while bacon also varies according to the method of curing and I have occasionally found it necessary to exclude certain brands of sugar-cured bacon from a patient's diet. Peanuts are placed in the 10% group because only a fraction of their carbohydrate is assimilated, the absorbable carbohydrate value being 6.68%, whereas by analysis they contain 25%. They are therefore a useful article of diet for the diabetic.

The classification and values given are only approximate, but care and accuracy in weighing and computing are none the less important.

<sup>1</sup> Copies of these charts may be obtained from Mr. Allan Grant, Medical Agent, 80 Collins Street, Melbourne.

TABLE I.  
Table of Food Values.

Water, clear broths, coffee and tea can be taken without allowance for food-content.

Foods arranged approximately according to contents of carbohydrates.				
5%.	10%.	15%.	20%.	
Reckon average carbohydrate in 5% vegetable as 3%; of 10% as 6%.				
1%-3%.	3%-5%.	10%.	15%.	20%.
Lettuce Cucumbers Spinach Asparagus Rhubarb Marrow Beet greens Celery Mushrooms	Tomatoes Brussels sprouts Water-cress Sea kale Cauliflower Cabbage Radishes Leeks French beans (tinned) Broccoli Artichokes (tinned)	French beans Pumpkin Turnip Squash Beetroot Carrots Onions Green peas (tinned) Water-melon Strawberries Lemons Peaches Pineapple Blackberries Gooseberries Oranges Peanuts (25% fat) Brazil nuts (65% fat)	Green peas Artichokes Parsnips Lima beans (tinned) Raspberries Currants Apricots Pears Apples Cherries	Potatoes Broad beans Haricot beans Green corn Boiled rice Boiled macaroni Plums Bananas Prunes Grapes Walnuts (30% fat) Almonds (55% fat)
Fruits—Vegetables (fresh or tinned).	Ripe olives (20% fat) Grape fruit			

1 gramme protein, 4 calories.

1 gramme carbohydrate, 4 calories.

1 gramme fat, 9 calories.

6.25 grammes protein contain 1 gramme nitrogen.

1 kilogram = 2.2 pounds.

30 grammes (gm.) or cubic centimetres

(c.c.m.) = 1 ounce.

A patient "at rest" requires about 25 calories per kilogram.

30 Grammes (1 Ounce) contain approximately:	Carbo-hydrate in Grammes.	Protein in Grammes.	Fat in Grammes.	Calories.
Oatcake	15	4	2	94
Oatmeal, dry weight	20	5	2	118
Shredded wheat	23	3	0	104
Bread (including wholemeal)	18	3	0	84
Uneseda biscuits (two)	10	1	1	53
Cream, 40% (highest grade)	1	1	12	116
Cream, 30% (medium grade)	1	1	9	89
Cream, 20% (low grade)	1	1	6	62
Milk	1.5	1	1	19
Milk, condensed, sweet	15	2	2	86
Butter	0	0	25	225
Oil	0	0	30	270
Egg (one)	0	6	6	78
Cheese	0	8	11	131
Meat (cooked, lean)	0	8	5	77
Chicken (cooked, lean)	0	8	3	59
Bacon	0	5	15	155
Ham	0	4	9	97
Fish, cod, haddock (cooked)	0	6	0	24
Sardines	0	7	6	82
Salmon (tinned)	0	6.5	3.5	58
Oysters (six)	4	6	1	49
Vegetables, 5% group	1	0.5	0	6
Vegetables, 10% group	2	0.5	0	10
Potato	6	1	0	28
Brazil nuts	2	5	20	208

Certain fallacies still exist regarding the so-called "diabetic" rolls and flours; wholemeal, gluten, Graham and other breads and even toast. Many of the various proprietary substitutes for white flour and bread are advertised to be free from starch and yet actually contain as much as ordinary flour. Some certainly contain less starch, but the balance is replaced by extra protein and the comparatively few preparations that are absolutely or almost completely starchless contain a very large amount of protein. In such cases the total sugar value from the standpoint of metabolism is practically the same as that of ordinary flour. If the correct proportion of carbohydrate and protein is known, these "diabetic" flours, breads, rolls *et cetera* may be of

occasional limited use, but the great danger still remains that the misleading assurance of being "specially prepared for diabetics" too often tempts the uninstructed patient to indulge in them excessively. The claims made for many of these special preparations, including the so-called sugarless jams and sweets (which are extremely nauseous as a rule), are false and misleading. They must be viewed with grave suspicion and I seldom, if ever, use them.

Diabetic patients are often allowed wholemeal bread, gluten bread, Graham bread *et cetera* instead of ordinary bread with the erroneous idea that they contain less starch, whereas their carbohydrate content in most cases differs very little from that of ordinary bread. Another misconception is that toast may be allowed when bread is forbidden. All that toasting of bread does is to drive off water and partially dextrinize the starch, so that one ounce of toast actually contains more carbohydrate than one ounce of bread.

#### DIABETIC ARITHMETIC.

When a diet is expressed in terms of the number of grammes of carbohydrate, protein and fat it contains, the caloric value is determined from the formula:

$$\text{Total calories} = 4C + 4P + 9F$$

The "glucose-equivalent" or "sugar-value" of a diet is the amount of glucose, expressed in grammes, made available to the body by complete combustion of the carbohydrate, protein and fat. Of the protein molecule 58% can be converted in this way and probably 10% of the fat (representing the glycerol fraction of the fat molecule). The sugar value is denoted by the symbol G and thus—

$$G = 100\% C + 58\% P + 10\% F$$

The next consideration is how to "dispense" a prescribed diet; for example, one containing 40 grammes of carbohydrate, 60 grammes of protein and 140 grammes of fat (or, as it is shortly denoted, C 40, P 60, F 140). The arrangement of foods shown in Table II would conform to these requirements.

TABLE II.

Food.	Breakfast.	Dinner.	Tea.	Total Grammes.	C.	P.	F.
5% vegetable	100	100	100	300	9	45	0
10% vegetable	—	60	—	60	4	1	0
10% fruit	—	90	—	90	9	1.5	0
Eggs	1	—	1	2	—	12	12
Meat (cooked)	—	100	—	100	—	28	17
Bacon	30	—	—	30	—	5	15
Cream (30%)	15	60	15	90	3	3	27
Butter	30	15	30	75	—	—	62.5
Cheese	—	—	15	15	—	4	5.5
Oatcake	20	—	10	30	15	4	2
Total Grammes = Multiply for Calories by					40	61	141
Total Calories (1,673) =					160	244	+1,269

$$G = C + 58\% P + 10\% F$$

$$= 40 + 35 + 14 = 89$$

This arrangement of the individual foods is but one of many that would comply with the carbo-

hydrate, protein and fat requirements. Furthermore, the natural likes and dislikes of the patient and the relative amounts of carbohydrate, protein and fat to be allotted to each meal must receive consideration. Adequate bulk is supplied to the diet mainly by the 5% and 10% vegetables and in general when the carbohydrate allowance is less than thirty grammes, it is not practicable to utilize food containing more than 10% carbohydrate for this purpose.

Cream is preferable to milk because it contains less carbohydrate and more fat, but in some cases there is no serious objection to the use of a little milk in tea or coffee, if the patient dislikes cream for this purpose. Oatcake is an excellent substitute for bread, as its spreading surface for butter is larger, it is more satisfying and its carbohydrate is absorbed more slowly.

#### DETAILS OF TREATMENT.

In the great majority of cases treatment of a diabetic must be continued throughout his lifetime. It is therefore essential that the patient be trained to manage his own case with only occasional assistance from the doctor. To Joslin we are indebted for emphasizing the importance of "educating" the patient. In his clinic at Boston he has elaborated this conception to a remarkable extent. Most of the patients board near the clinic, for Joslin says: "No diabetic treatment is of any practical use if it cannot be carried out efficiently in a boarding house." The patient must be taught: (i) the elementary principles of dietetics and their particular application to diabetes; (ii) the appropriate early treatment of the major and minor complications of diabetes; (iii) the management of the various little problems continually arising; (iv) the method of measuring and injecting a dose of "Insulin" (if used); (v) how to test the urine for sugar and diacetic acid; (vi) how to construct a diet and to express it in terms of C, P and F calories and glucose equivalent; and (vii) the necessity of keeping accurate records of his diet, weight and urine tests.

If no instructional clinic is available, the various diabetic hand books are invaluable and of these perhaps the best are: Joslin's "Diabetic Manual for the Mutual Use of Doctor and Patient," "A Primer for Diabetic Patients" by Wilder, Foley and Ellithorpe, Lawrence's "The Diabetic Life."

In mild cases the urine can be kept free from sugar and the blood sugar maintained at a low level by merely restricting the use of those foods containing high percentages of carbohydrate, without troubling to weigh them, that is a "qualitative" restriction. The milder the condition, the less will be the restriction necessary. An occasional "egg and vegetable day" is beneficial, three eggs and about half a pound of 5% vegetables, together with abundant fluids (water, weak tea and coffee and clear broths) being given, and mild purgation is obtained by means of saline aperients.

The patients with very mild diabetes are often the most unsatisfactory to manage, for they do not fully appreciate the advantages of treatment and tend to become careless and to drift until more distressing symptoms appear, indicating that the condition has progressed beyond the mild stage and that a far more rigid dietary restriction is inevitable. Such patients should be warned of this tendency.

In the more severe cases treatment in hospital for two or three weeks is desirable, in fact essential for adequate treatment, the time and money spent being saved many times over in the future. Admittedly, it is possible to treat even those with moderately severe diabetes in their homes, but it is never so satisfactory in the end. During the stay in hospital the patient gains confidence and learns much that is invaluable to him throughout his life time.

The patient's "tolerance" must first be ascertained, that is the sugar value (G) of the maximal diet he can assimilate without glycosuria resulting. This may be determined in various ways. Joslin uses a series of test diets which contain decreasing amounts of carbohydrate and protein, with a consequent diminution of the G value. The patient commences with test diet 1 or test diet 2 and works down until his urine becomes sugar free. Then graduated maintenance diets (consisting of gradually increasing amounts of carbohydrate, protein and fat) are given until glycosuria returns and so his tolerance is roughly estimated. I prefer a scheme employed by Wilder at the Mayo Clinic and follow it in principle, if not in exact detail. The patient is put to bed and the surface area of his body is calculated from his height and weight. From this, together with the age and sex, is determined his "basal maintenance requirement"—the number of calories required by the body while completely at rest to maintain life without loss of weight. These calculations are greatly simplified by the use of Boothby and Sandiford's nomographic charts, but if neither these nor the Dubois tables are available, the approximate basal maintenance requirement may be taken as twenty-five calories for each kilogram of body weight.

Assuming the patient's basal maintenance requirement to be 1,400 calories, a diet is constructed by first fixing the amount of protein at approximately one gramme per kilogram of body weight (one kilogram = 2.2 pounds). The amounts of carbohydrate and fat are then determined by means of Wilder's formula, the carbohydrate being kept at a low level, for example 20 to 30 grammes. The urine is tested throughout the day, specimens being obtained before breakfast and from one to two hours after each meal or the daily glucose excretion is estimated quantitatively if necessary. If on the fourth day of this diet the patient's urine has not become sugar free, he is then starved that day (unless acidosis is present); if glycosuria persists, he is partially starved on the fifth day and then reverts to the basal diet. The urine of most patients will now become

sugar free, if it has not already done so. Whenever this occurs, carbohydrate is gradually added to the diet day by day until glycosuria returns. The highest sugar value (G) which does not produce glycosuria, is the patient's "tolerance." Patients with more severe diabetes, however, may never have a sugar free urine on the basal maintenance diet, even when the carbohydrate is kept at a minimum, and the patient's tolerance is then determined by estimating on four successive days the amount of sugar passed in the twenty-four hours' urine. The sugar intake of the patient (the G of the diet) and the amount he is losing in the urine are known, so by subtracting one from the other the amount of sugar his body is actually able to use is found, that is his "tolerance." This procedure is not strictly applicable to the patient who is in a state of nitrogen unbalance and who is metabolizing part of his own body protein. When such is the case, the average daily excretion of nitrogen in the urine over a period of several days on this basal maintenance diet is multiplied by 3.7, this giving the available glucose value, from which is subtracted the glucose excreted in the urine in order to determine the patient's tolerance. In practice this slight inaccuracy may usually be ignored.

Experience teaches that when a patient's urine does not become sugar free after four days of such a régime, time may be saved by using "Insulin" at this stage in order to reduce the blood sugar more rapidly and often it can be discontinued after a comparatively short time if the patient's tolerance improves.

The tolerance having been established, a diet must now be planned that will enable the patient to engage safely in reasonable activity. The caloric value must, therefore, be increased above his basal requirement, for this was only applicable during complete rest. The increase should be from 25% upwards according to the nature of his occupation, habits, activities *et cetera*. The amount of protein is still limited to one gramme per kilogram of body weight; more than this is harmful as a rule, much less is generally inadequate to repair the wear and tear of the tissue proteins. With regard to carbohydrate and fat the principles already discussed still apply.

Generally speaking, patients whose sugar tolerance is 70 and over, can be handled by dietetic treatment alone, provided they do not lead very strenuous lives. If the tolerance is persistently lower than 70, it is almost impossible to keep them in reasonable health, weight and strength for any length of time. The value of "Insulin" is now apparent, for one unit of "Insulin" will enable the patient to use from one and a half to two grammes of additional sugar. This glucose equivalent of "Insulin" may be altered by high protein and high carbohydrate diets and it may be depressed by acute complications, especially infections and other factors.

A dietary is now planned with a G value of approximately 100. Assuming the patient's toler-

ance to be 60, sufficient "Insulin" must be given to balance the extra forty grammes of glucose, that is twenty to thirty units. If, however, the patient's blood sugar content is high, part of the "Insulin" will be used to metabolize this excess of sugar in the blood and more than thirty units may be required during the early stages of treatment. Moreover, if any infection be present, additional "Insulin" will be necessary.

Theoretically, "Insulin" should be injected at frequent intervals throughout the day, but this is impracticable. It is generally given before each meal or before breakfast and tea or before breakfast only. If the daily requirements exceed thirty units it is usually desirable to divide it into two doses.

The amount of carbohydrate allotted to each meal depends largely on when the "Insulin" is injected. If before breakfast only, most is apportioned to breakfast and the midday meal and least to the evening meal. This is usually the best arrangement also for the patient treated without "Insulin."

"Insulin" is generally given about twenty minutes before the meal, but the optimum interval varies—some patients require the injection immediately before the meal, while in others forty minutes is the best interval. This must be determined for each individual.

General hygienic treatment is also necessary and particularly the removal of any gross septic foci.

The urine must be tested regularly, those specimens voided from one to two hours after each meal and before breakfast being the most suitable. Later this may be done less frequently, provided the patient is progressing satisfactorily. The best single specimen to test is that voided about two hours after the morning meal.

#### "Insulin": Its Use and Effects.

"Insulin" is usually injected subcutaneously, any site free from superficial veins being suitable, but the regions most commonly used are the lateral and dorsal aspects of the arms, the lateral and anterior aspects of the thigh, the abdominal wall and the back. To minimize undesirable subcutaneous thickening which renders difficult the injection and absorption of the "Insulin," the same site should not be used too frequently; it is better to use the various sites in rotation.

"Insulin" is sometimes given intravenously when a more rapid effect is desired and in certain American clinics this has been the routine method of administration.

Many attempts have been made to utilize other channels of absorption, but the effects obtained have been slight and uncertain, with the exception of rectal administration which is of proved value.

#### Local Effects.

Local effects vary with the individual patient, the site of injection and the brand of "Insulin" used.

An immediate stinging sensation is not uncommon at the commencement of treatment, but this effect

seldom continues for long. Another local effect consists of a hot, brawny swelling which appears from one to several days after the injection and resembles a vaccine reaction. This seems to occur more frequently in women and especially the rather obese type. "Antiphlogistine" applied immediately after the injection will often palliate and may even prevent the occurrence of both the immediate and delayed local reactions.

I have also found sterile glycerine injected with the "Insulin" (0.06 mil or one minim to ten units) to be very effective in some cases, while firm stroking with the thumb at the site of injection also helps.

Most patients experience no local "Insulin" reactions of any consequence, but occasionally they are most troublesome and painful. A change to another brand of "Insulin" will often be effective, especially to one containing no tricesol.

#### *Anaphylactic Reaction.*

An anaphylactic reaction is extremely rare; the recorded cases occurred during the early days of "Insulin" manufacture, when the protein content was sometimes unduly high. One of Wilder's patients was sensitive to "Insulin" prepared from pig pancreas, but not to that made from the pancreas of the ox.

#### *Local Fatty Atrophy.*

Two of my diabetic patients, both children, have developed localized subcutaneous fatty atrophy at the sites of "Insulin" injection. In one, a boy aged eight, the outer part of the arms are affected and in the other, a girl aged ten, the outer parts of the thigh. In both cases the "Insulin" had been injected in the affected area far too frequently, instead of the sites being changed in rotation as already advised. Both children had used "Insulin" for about a year before this effect was noticed and in one the change to a fresh site of injection immediately resulted in so much better absorption that the "Insulin" dose had to be diminished, whereas previously it had been necessary gradually to increase it.

Barborka has recorded two similar cases, both in females, one middle-aged and one elderly, while Depisch in Vienna demonstrated five cases of what he termed "local lipodystrophy."

#### *General or Hypoglycæmic Reactions.*

General or hypoglycæmic reactions frequently occurred in the early days of "Insulin" treatment and occasionally proved fatal. With ordinary doses of modern "Insulin," however, the dangers of these reactions are exaggerated and cause many patients unnecessary anxiety. They are most liable to occur at the beginning of treatment, for it takes more "Insulin" to render a patient's urine sugar free than to keep it so.

It is a good practice to insure that every patient will experience at least one reaction during his period of hospital treatment, so that he is aware of

the sensation and the nature and treatment of a reaction can be explained.

The tendency of "Insulin" is to reduce the blood sugar to the normal level and increasing doses do not lower it below that level in proportion to their amounts. When through over-dosage, both absolute and relative, the blood sugar falls below the lower limit of normality, then symptoms of hypoglycæmia may appear.

Some years ago it was thought that the various symptoms appeared in sequence as the blood sugar level became progressively lower. It is now known that this is not the case and that the individual reaction to the same degree of hypoglycæmia varies; some patients may experience no symptoms of note, even when their blood sugar value is much below normal. There is no definite relation between the degree of hypoglycæmia and the reaction.

Still more important perhaps is the fact that "Insulin" reactions may and do occur even when actual hyperglycæmia is present. I have observed several such reactions, some of which were at first thought to be hysterical in origin, owing to the high blood sugar value, but in which the patients became genuinely unconscious and were rapidly restored to normality by administration of sugar. It is possible that there is some analogy between such reactions and those instances of high blood pressure in which too great or too rapid a reduction in the level of the blood pressure results in unpleasant or even dangerous symptoms. Possibly the general metabolism becomes adjusted to the higher sugar content of the blood and a lowering below the optimum content in such cases leads to a relative glucose starvation of the tissues with consequent bodily distress.

John, of the Crile Clinic at Cleveland, reports that in 54% of his patients reaction apparently coincided with hypoglycæmia, while in 46% the reaction occurred with normal glycæmia or even when hyperglycæmia was present. These figures seem remarkable, but provide food for thought. He considers it obvious that many reactions must be due to something other than hypoglycæmia and concludes that the occurrence of a reaction after the administration of "Insulin" apparently bears no uniform relation (i) to the size of the dose or (ii) to the blood sugar level.

The reaction usually appears from two to four hours after the "Insulin" is given, but may occur within a few minutes or be delayed for as long as twelve hours, as in the case of a child who had definite reactions about 8 p.m. after thirty units of "Insulin" given at 7.45 a.m. There is considerable individual variation and the rate of absorption of the "Insulin" must be a factor.

Symptoms are numerous and varied, but each individual patient usually experiences the same series of symptoms with the same degree of reaction.

The earlier and milder sensations include vague apprehension, uneasiness and nervousness or a feeling of anxiety, tremor (especially of the hands), weakness, exhaustion, "sinking sensation," voracious

hunger, headache, pallor, increased pulse rate (especially in children), sweating (sometimes profuse and drenching), vertigo, faintness, muscular incoordination, diplopia and nystagmus. Later may appear emotional disturbances (resembling hysteria), aphasia, dysarthria, delirium, deafness and delusions; while in the more severe forms paralysis, abolition of reflexes and unconsciousness may occur. There is usually no pyrexia, but in the later stages the temperature is subnormal. The convulsions so characteristic of reaction in rabbits and other animals rarely, if ever, occur in man.

Children are frequently awakened even from a sound sleep and cry out as though terrified, while strabismus and nystagmus are very common.

In regard to treatment, the milder reaction is self-limited and requires no treatment as a rule. Probably the liver liberates glycogen and restores the balance. It lasts from a few minutes to one or two hours, while a severe reaction untreated may last six to eight hours.

If mild reactions are occurring frequently, portion of the carbohydrate of the next meal may be taken or a cup of tea, coffee or broth will usually be effective. It is unnecessary to give extra carbohydrate unless the reaction is fairly severe, otherwise glycosuria may be needlessly caused.

A half tumbler of orange juice to which is added a teaspoonful of sugar is usually sufficient in a moderate reaction. Barley sugar or boiled sweets are useful because they contain a large proportion of glucose; it is a good plan for all patients using "Insulin" to carry some with them as a safeguard. Glucose itself acts very rapidly and may be given in doses of one tablespoonful or more in hot water to which may be added a little whisky.

In severe reactions when the patient cannot swallow, it may occasionally be necessary to give about three hundred cubic centimetres of 10% glucose-saline solution intravenously. Some authorities claim that the human body can always right itself without aid, but I cannot agree with this entirely and in any case it certainly should not justify a policy of inaction when the effects of treatment are so rapid and satisfactory. No patient should ever be allowed to die from a hypoglycæmic reaction nor should his life be even risked by inaction.

Adrenalin has been used on the assumption that it mobilizes the liver glycogen, but I have found it disappointing. However, it might be justifiable, in a severe reaction that was not quickly responding to glucose, to give one cubic centimetre of one in a thousand solution every ten minutes while the patient is unconscious, but I have never found this necessary.

Calcium appears to have the effect of preventing hypoglycæmic reactions without increasing the blood sugar value and without diminishing the "Insulin" efficiency. Pituitary extract also exerts a beneficial effect in hypoglycæmic reactions, producing a rapid rise of blood sugar. This antagonistic

action of pituitary extract appears to take place in the periphery, namely, skeletal muscle metabolism (*vide* Moehlig and Ainslee).

#### "Insulin" Substitutes.

The great disadvantage of "Insulin" is that it has to be administered by hypodermic injection, but this would rarely if ever be considered sufficient reason for discontinuing it by any patient who has experienced the benefits resulting from its proper use. Its strongest advocates are the severe diabetics who survived the pre-"Insulin," semi-starvation era and whose constancy and perseverance have since been so greatly rewarded.

The discovery of "Insulin" and its amazing effects in diabetes have stimulated the production of various preparations designed wholly or in part to supplant it. Measured by the standard of beneficial effect produced, they fall far short of "Insulin," but some are not altogether valueless, especially in milder diabetes and by virtue of their oral method of administration. However, until something equalling the standard of "Insulin" is found there is no adequate reason for changing.

"Synthalin," a German preparation introduced by Frank, is a synthetic guanidin derivative. It has been subjected to adequate tests and in the main the reports from many independent sources agree that while its action resembles that of "Insulin" in some respects, it is not nearly so potent and it too often produces toxic symptoms. These toxic effects are associated with degenerative changes in the liver and kidneys resulting in jaundice and albuminuria, while gastro-intestinal symptoms are not uncommon. These effects may be so severe as to compel the discontinuance of the remedy. "Synthalin" might possibly enable some reduction in the "Insulin" dose to be made or a lessening of the number of injections required.

"Glukhorment" is a pancreatic product for which von Noorden and others claim a value comparable to that of "Synthalin," but without its toxic symptoms. It has its use possibly in the milder cases of diabetes and as an adjuvant to "Insulin."

"Myrtillin" was introduced by Allen. It is of unknown composition and is present in all green plants, being most readily extracted from the leaves of the American blueberry and various myrtles, especially *Vinca minor*. It is related to the popular South African diabetic "cure" known as "Vinca," the latter being the leaves of *Vinca rosea*.

#### Blood Sugar Estimations.

One of the main criteria of satisfactory treatment is the maintenance of the blood sugar content as close to normal as possible and not merely the avoidance of glycosuria. While, therefore, blood sugar estimations are not absolutely essential in many cases of diabetes they are most desirable from time to time. In general a knowledge of the fasting blood sugar is the most helpful, although occasionally the sugar content of the blood at other times

of the day in relation to meals and "Insulin" is of value.

In many cases of diabetes the threshold level of the blood sugar is raised above the normal 0.180% and glycosuria may not occur even when the blood sugar content is 0.300% or higher.

The average normal fasting blood sugar value is 0.100 milligrammes *per centum*, a variation of 0.010% above and below this figure being regarded as within normal limits. In a series of over 20,000 non-diabetics John found that in 15.14% fasting values of 0.080% and less were obtained, while in 7.85% values of 0.075% and less were obtained, the lowest figure being 0.030%. These individuals apparently experienced no symptoms referable to their low blood sugar content and he concluded this was apparently normal for them. He also states that values exceeding 0.130% are obtained in some cases of obesity, genito-urinary disease, kidney disease, hypertension and arteriosclerosis.

#### GUIDING PRINCIPLES IN SPECIAL CASES.

##### Acute Diabetes.

There should be no delay in commencing "Insulin" treatment in all diabetes of acute onset. The damage to the pancreas progresses rapidly and the patient's tolerance quickly falls. Sufficient "Insulin" should be given to keep the blood sugar constantly as close to normal as possible; in fact, at first it is wise to maintain the patient on the verge of hypoglycaemic reactions. This enables the pancreas to retain its maximum degree of efficiency and the future outlook is correspondingly improved. The patient should be at rest in bed during the early stages of treatment and all but the slightest exertion curtailed for some time.

##### Diabetes in Children.

It is my invariable practice to use "Insulin" in diabetes in children. Boyd, of Toronto, found that 15% of children were able to take an adequate diet without "Insulin" and of the remaining 85% three-quarters could not be kept with a sugar free urine even on their basal maintenance diets, without "Insulin." Even in the 15% of cases I would urge the use of sufficient "Insulin" to maintain the blood sugar within normal limits.

The basal maintenance requirement of children is relatively much higher than that of adults; for example, a child between the ages of one and six will need from 70 to 100 calories per kilogram of body weight and between the ages of six and sixteen from 40 to 70 calories approximately (Lawrence). Relatively much more protein must be given—two or even three grammes per kilogram during the first decade—and rather more carbohydrate.

Children manifest greater variations in their response to "Insulin" than adults and the dosage must be more frequently readjusted. They usually resign themselves to "Insulin" treatment in a surprising way and in this respect are worthy examples to many older diabetics. They require doses at least as large as adults, it being not uncommon for a

child of, say, ten years of age to use thirty to forty units a day and some need much more. John actually gave a six year old child as much as two hundred units a day (in two doses) for a period of one month without the occurrence of a single reaction!

It has been my experience and that of most American physicians treating diabetic children that the dose of "Insulin" can seldom be lessened to any extent after the initial stage of treatment is passed, indicating that no definite gain in tolerance has occurred. This contrasts with the frequency with which the "Insulin" dose can be reduced and occasionally discontinued in the case of adults. Possibly the pancreas in diabetic children is of poor quality and possesses little regenerative power or perhaps the increased metabolism associated with puberty and adolescence proves too great a burden. Nevertheless, diabetic children using adequate doses of "Insulin" develop both physically and mentally in as normal a manner as could be desired, and cannot be distinguished in a group of healthy children. Menstruation is little, if at all, delayed in girls; surely one of the greatest testimonies of all to the efficacy of "Insulin." During menstruation the balance is usually temporarily disturbed, but no apparent lowering of tolerance subsequently results.

Only two of my diabetic children have died during the past five years and in both cases this was accidental. One contracted tuberculous meningitis and the death of the other was a tragedy, due to a chemist's carelessness in dispensing the Benedict solution wrongly, so that it did not react to glycosuria. The child lived in the country and died from coma before it was realized that this was pending.

"Insulin" has transformed the whole aspect of juvenile diabetes and there seems no reason why these children should not continue to progress as they have done during the past five years. Possibly after the stage of adolescence is passed, it may even be possible to lessen the amount of "Insulin" required; time alone will show. Joslin testifies most eloquently to the miraculous effect of "Insulin" on diabetic children and I ardently endorse his every word.

##### Diabetic Coma.

Remarkable as have been the effects of "Insulin" in severe cases of diabetes, possibly the most dramatic results are obtained in the treatment of coma. The mortality rate before the advent of "Insulin" was appalling and even with its help it is not possible to restore every patient with diabetic coma. The sooner treatment is commenced and the more vigorously it is carried out, the greater the prospects of success. After ten hours or longer of deep coma "Insulin" is usually of little avail; for even though the blood sugar is reduced and the chemical acidosis of the blood partly cleared up, the toxic products of the ketone bodies affect the cardiac muscle and kidneys and death results from cardiac failure or uræmia.

The kidneys are almost always affected to some extent and when much albuminuria is present I have come to regard the outlook as extremely grave and recovery improbable. Actual suppression of urine is not infrequent.

In all cases of diabetic coma the sooner consciousness is restored, the better. Every additional half hour the patient remains unconscious during treatment lessens the prospect of ultimate recovery. It is therefore necessary to use very large doses of "Insulin," together with sufficient glucose to insure that the blood sugar will not be lowered excessively. This should be given intravenously if the condition is grave. Persistence of glycosuria during treatment is of no importance, provided the ketone bodies are reduced and abolished. The glycosuria can be cleared up later, when the acidosis has been controlled. I have given as much as nine hundred units of "Insulin" in eight hours to a comatose patient, at the end of which time the urine was all but completely free from diacetic acid and acetone, consciousness having been recovered earlier.

Incipient coma is also to be vigorously treated with "Insulin"; for example, a small boy, eight years of age, needed 360 units within five hours to restore him to safety. The amount of "Insulin" required depends upon the degree of acidosis or coma and other factors, so it is not possible to formulate general detailed instructions as yet. For a patient actually comatose a common initial dose would be 100 units and the amounts of subsequent doses must depend on the examination of the urine, which should be made as frequently as practicable during the stage of coma. Further doses of 100 units or more will be necessary if the patient is not recovering consciousness or the ketonuria is not lessening. These subsequent doses may be given at intervals of two hours with sufficient glucose to prevent any possibility of hypoglycæmia resulting. Blood sugar estimations are helpful, but not essential, to efficient treatment.

Reliance must not be placed upon "Insulin" alone. The usual anticoma procedures, such as warmth, washing out the bowel and stomach, purgation, copious fluids and cardiac stimulants, must be employed. The value of sodium bicarbonate is still debated, but it may be of definite value in certain cases.

#### Intercurrent Infections.

Intercurrent infections comprise such conditions as tonsillitis, bronchitis, influenza, pneumonia, tuberculosis, boils and carbuncles, ulceration, gangrene of the extremities *et cetera*.

These infections frequently precipitate coma, even in mild cases of diabetes, and always lower the patient's glucose tolerance to some extent, as a rule temporarily, but at times permanently. Apart from the danger of coma, "Insulin" is often necessary to enable the patient to resist the infection effectively or if he is already using it, to increase the dose, so that glycosuria may be controlled and the blood sugar level kept as near to normal as possible.

In the case of boils, carbuncles, ulceration and gangrene it is imperative that sufficient "Insulin" be given to maintain the patient in a state of mild hypoglycæmia. Merely to prevent the occurrence of glycosuria is futile; the blood sugar level must be kept slightly subnormal. By this procedure the rate of healing is sometimes remarkable, at times almost exceeding that of similar conditions in non-diabetic patients. The healing of chronic ulcers or indolent wounds may possibly be stimulated by direct application of "Insulin" to the ulcer or wound.

The value of "Insulin" in diabetes associated with tuberculosis is obvious, as a larger and more nourishing diet can safely be given.

#### Surgery in Diabetes.

It is no longer necessary to refuse operation to diabetic patients on account of the extra risks entailed, such as the liability to acidosis and coma and subsequent delayed healing of the wound, especially if infected. With adequate preoperative and postoperative treatment the risk to the diabetic patient is little if at all greater than that to the non-diabetic undergoing the same operation.

Foster says: "Every patient with diabetes who is operated on should be regarded as a candidate for coma, and its prevention is better than the cure." The preoperative treatment consists in giving a diet containing a relatively large amount of readily absorbable carbohydrate, say 150 grammes *per diem*, for several days prior to the operation and sufficient "Insulin" to control any glycosuria. This enables the liver to store up a large amount of glycogen which can subsequently be used as required to combat acidosis. Bread, toast, oatmeal, cereals and fruits are suitable carbohydrate foods for this purpose. If time does not permit of this preparation, the operation being of great urgency, five hundred cubic centimetres of 10% glucose-saline solution, together with fifty units of "Insulin," should be given intravenously before or during the operation. When glucose is given intravenously it is most important that it be absolutely pure. A reliable preparation is *pulvis* glucose anhydrous, as prepared by the British Drug Houses, Limited.

After the operation glucose-saline solution should be given by the rectum in full quantities and later fruit juices and thin gruel by mouth. Sufficient "Insulin" is administered in repeated doses so that at least seventy-five grammes of glucose are metabolized every twenty-four hours. One patient, a severe diabetic, was successfully operated upon for a gangrenous appendix with general peritonitis by means of this *régime*. It is necessary at all costs to prevent severe acidosis and to combat it on its appearance; therefore sufficient carbohydrate and "Insulin" must be given to attain this object. During the first few days after operation glycosuria is relatively unimportant, so long as carbohydrate metabolism is sufficient to prevent ketone body production.

### Pregnancy.

In the pre-"Insulin" epoch diabetic women seldom became pregnant and it was even rarer for the pregnancy to continue to full term. Of those who bore children almost one half died during the first three years following childbirth. These remarks apply to genuine diabetic patients and not to those with transient glycosuria. While it may be possible, it is not advisable to allow a diabetic woman to go through pregnancy without the aid of "Insulin," for, apart from the immediate risks to the woman and the fetus, the patient's ultimate prognosis is impaired. "Insulin" may not be required throughout the full term of pregnancy, but should be used when the patient's blood sugar content is unduly raised and particularly just before and after parturition.

### CONCLUSION.

It is perhaps unfortunate that the diabetics of the future and the physicians treating them will never experience quite so keenly and with such gratitude the joy and comfort that the discovery of "Insulin" has brought to those of the present day. Already there are some who in their ignorance attempt to belittle Banting's great gift to the diabetics of the world. Let Joslin voice the feelings of every physician who has used "Insulin" judiciously:

Who wants a vacation when he can watch mere ghosts of children start to grow, play, and make a noise and see their mothers smile again, and read in the paper that his young colonel with the Victoria Cross after ten years of faithful dieting has nearly won the local golf championship. Yet insulin is in its infancy. New possibilities still continue to unfold. One accomplishes in hours what formerly took days.

In fact, may I add, could often not be accomplished at all.

### THE EFFECT OF BLOOD TRANSFUSION ON BLOOD REGENERATION.

By J. V. DUHIG, M.B.,

*Director, Brisbane and District Laboratory,  
Hospital for Sick Children, Brisbane.*

THE effect of blood transfusion upon hæmopoiesis seems to be still an open question. Very little direct evidence seems to have been brought to a solution of the problem. In the following paper, I am able to show that blood regeneration does definitely occur as a result of blood transfusion. The evidence is all the more convincing because of the fact that in the patient whose case is considered, very little natural regeneration took place; this is evident from the curves and table shown, so that transfusion effects could be studied almost independently of any natural bone marrow response such as might be presumed to occur during the remission stage of pernicious anæmia in an adult.

The patient was a child, aged five, suffering from anæmia of a type quite unknown to me, which resembled exactly primary or pernicious anæmia. In the face of all literature

on the subject, I was loath to diagnose this disease. The blood picture at the first examination was as follows: Hæmoglobin 15%, colour index 1.1, red cells 660,000, leucocytes 3,000; poikilocytosis, anisocytosis, polychromasia and punctate basophilia were present in the smear. This was the result of a blood examination made by one of the laboratory assistants and I took the trouble to confirm it personally.

I estimated the reticulocyte concentration by a method which I modified slightly from that described by Piney.<sup>(1)</sup> This method has the advantage over that of Brookfield<sup>(2)</sup> in that it is simpler, more economical and not less accurate. Brookfield's method is a little more expensive and difficult without the optical apparatus he specifies. My own method is as follows:

A large drop of a saturated alcoholic solution of brilliant cresyl blue is placed in a hollow ground glass cell and allowed to evaporate, thus leaving a residue of dye in a very finely divided state. The circular edge of the cell having been smeared with vaseline, about twenty cubic millimetres of peripheral blood are taken and blown on to the dye. With a sterile platinum loop the blood is quickly and intimately mixed with the dye and a coverslip is placed over the cell so as to prevent evaporation. The blood-dye mixture is allowed to stand for about half an hour. My experience goes to show that fixation of the dye by the blood cells is rather slow and better colouration and therefore more accurate results are to be obtained after relatively prolonged staining. At the end of half an hour one or two drops of the mixture are placed with a platinum loop on a clean dry slide and a very thin smear made in the ordinary way. The slide is examined either with or without counterstaining by Leishman's or some similar stain. With practice counterstaining is unnecessary, though it does undoubtedly enhance the beauty of the preparation for demonstration purposes. A small paper mask with a narrow oblong window is cut and inserted in the eye piece and a count made of reticulated and non-reticulated cells by slowly moving the smear sideways and counting the cells as they appear at the edge of the window until one thousand cells in all are counted. The reticulocyte percentage is calculated and the total red cell count being known, the reticulocyte concentration is deduced.

From recent work<sup>(2)</sup> we may very reasonably infer that the concentration of reticulocytes in the blood is an expression of blood regeneration if not of absolute, at least of high relative value.

The evidence for the value of transfusion as a hæmopoietic agent is shown in the table and curve. That it was not the sole regenerative agent in this case is also evident and this point is discussed in reviewing the table, but for whatever regeneration took place transfusion was preponderantly responsible.

The first reticulocyte count carried out on August 31 when the red cells were only 660,000 per cubic millimetre yielded a percentage of 5.2. I am now inclined to think it was actually lower. This being almost the first count I did, there would

TABLE.

Date.	Hæmoglobin. %	Colour Index.	Red Blood Corpuscles.	Reticulocytes.	
				%	Concentration.
August 31	15	1.1	660,000	—	—
September 1	Tr.	—	—	5.2	34,320
September 6	30	1.2	1,260,000	—	—
September 7	30	0.9	1,720,000	6.3	108,360
September 11	30	0.9	1,690,000	3.3	55,770
September 14	30	0.9	1,650,000	3.0	49,500
September 18	26	0.9	1,470,000	2.6	38,220
September 21	Tr.	—	—	—	—
September 24	38	1.0	1,990,000	5.0	99,500
September 25	40	1.0	2,130,000	4.0	85,200
September 28	42	0.9	2,160,000	1.5	224,000
October 2	40	0.9	2,230,000	2.6	57,980
October 9	—	—	1,730,000	—	—
October 30	Tr.	—	—	—	—
November 1	45	1.0	2,280,000	5.2	118,560
November 2	45	0.9	2,560,000	3.1	79,360
November 6	48	0.9	2,500,000	0.9	22,500
November 9	50	1.0	2,540,000	0.6	15,240
November 13	48	1.0	2,460,000	1.0	24,600
November 16	45	1.0	2,280,000	0.7	15,960

Tr. = Transfusion of about 300 cubic centimetres of blood.

certainly be a greater error in that than in subsequent counts. It is noticeable that never afterwards was so high a count obtained except immediately after transfusion. In any case a reticulocyte percentage of 5.2 represents a very low reticulocyte concentration which is after all what matters most.

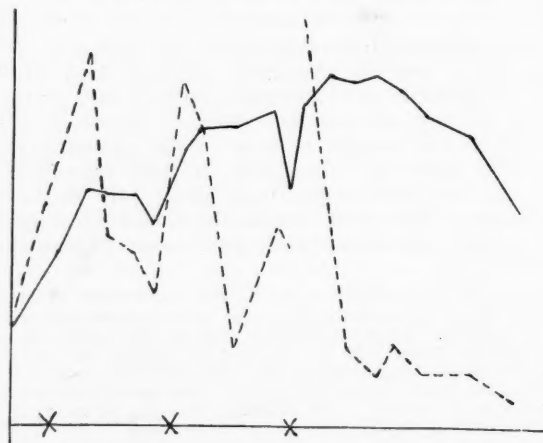
It is also to be noted that while the red cell count increases up to the eighth day after the first transfusion, up to the fifteenth day after the second and up to about the twelfth day after the third, the reticulocyte count reaches its maximum especially on the day following but never later than four days after transfusion. From the fifth day it falls rapidly.

The fall in the reticulocyte concentration about the fifth day after transfusion in this case cannot be assigned to the physiological inhibition of regeneration due to the stimulus of approaching plethora such as occurs in recovery from pernicious or severe secondary anæmia. Obviously the fall occurs while the erythrocyte count is still far below the normal. This seems to me additional valid evidence of a negative sort for the hæmopoietic value of transfusion.

It will now be natural to ask why a volume of foreign blood only about one-tenth that of the blood in the subject's circulation should produce so great an effect. Since each of the subject's red cells was liberally provided with hæmoglobin and since the new oxygen carriers introduced were a small fraction of the resultant total, it is difficult to believe that regeneration was due in a solely quantitative way to better aeration of the marrow. I think the result must be due to a qualitative superiority in the transfused cells, the nature of which I regard as still obscure.

The rather sharp rise in the reticulocyte concentration with a rise in the erythrocyte count fifteen days after the second transfusion, with a fall in the erythrocytes fifteen days after the

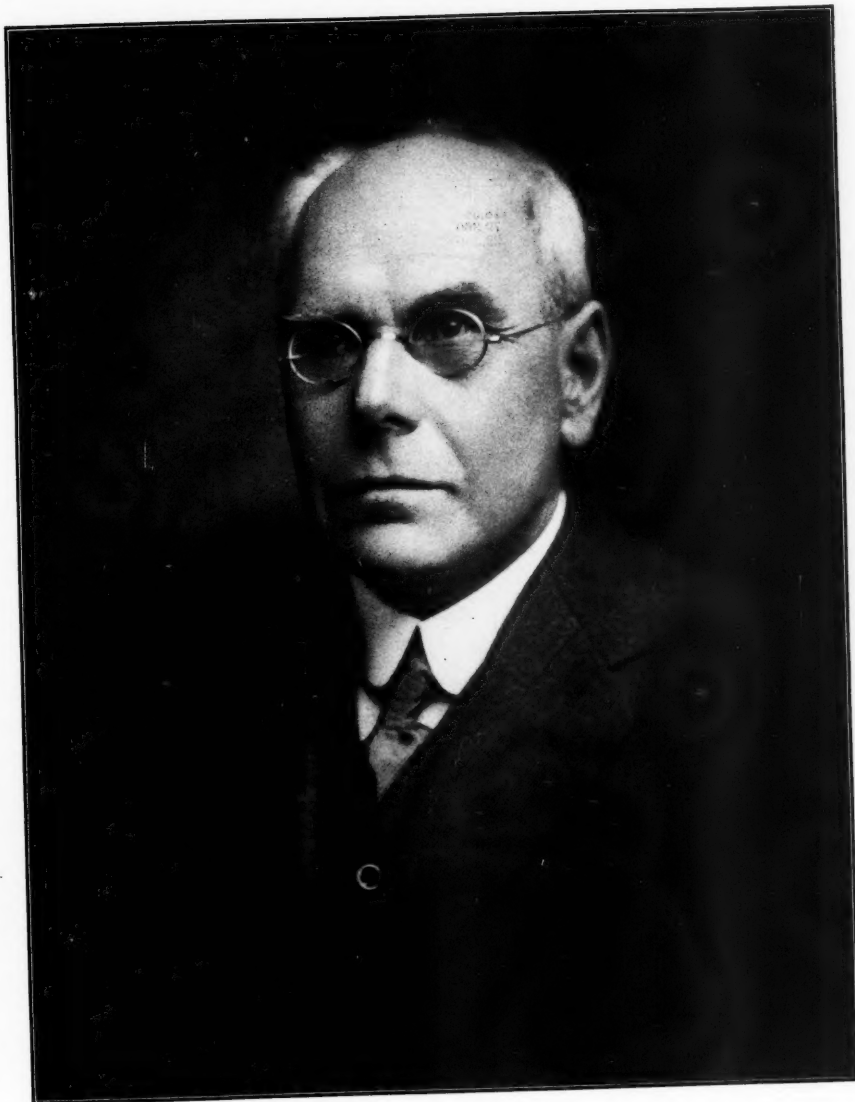
third transfusion is difficult to explain. In the first case we can only postulate some obscure stimulus, in the second perhaps a reticulocyte persistence while mature cells are undergoing destruction, but this latter explanation is not satisfactory. If we return to the analogous phenomenon observed at the first count where reticulocyte percentage was 5.2, but the reticulocyte concentration is only 34,320, we see that the marrow is functioning, but so feebly that it cannot overtake blood destruction and the percentage of immature forms is naturally high. They evidently either mature rapidly and are destroyed or are destroyed before reaching maturity, so that though there comes an upward thrust of the curve when the erythrocyte count tends to fall very low in all conditions, the tentative hypothesis put forward above is nullified.



Graph showing relationship between erythrocytes and reticulocytes. Erythrocytes are indicated by the continuous line in millions, the reticulocytes by the broken line in thousands. x = points in time at which transfusions were done.

The table shows clearly how fallacious it would be to attempt to estimate accurately blood regeneration from red cell counts alone in cases of this nature for three reasons: (i) The rising erythrocyte count for some time after transfusion (with a falling reticulocyte count) is due to the presence of functioning foreign cells and autogenous cells still persisting from the initial high degree of regeneration after transfusion and not solely to persistent regeneration. (ii) Blood counting is subject to considerable error and while the error in reticulocyte counting is of the same order, it varies directly as the erythrocyte count and whatever the error, the reticulocyte percentage of red cells is always the same in any given set of counts at any one given time. (iii) An accurate estimate of regeneration based solely on erythrocyte counts involves estimating the blood volume of recipient, a difficult procedure, and a very accurate estimate of the amount transfused. Mathematical treatment of assumed figures will show how great the error in this procedure will be.

It may be stated, in answer to another possible objection, that the reticulocyte count is not greatly



*S. J. ...*

in  
in  
bl  
lit  
be  
cy  
tr  
lit  
tr

ma  
th  
no

Ev  
tra  
to  
fu

of  
wh  
oc  
in  
no  
of

ev  
cel  
err

to  
to  
ca

c  
the  
wi  
Pla  
Ap  
"N  
An  
pag

VI

(F

att  
dia  
to  
ex  
att

influenced by the number of such cells introduced into the circulation from without. Assuming the blood volume of the patient investigated to be three litres and the amount of whole blood transfused to be three hundred cubic centimetres, the reticulocytes introduced are at once reduced in concentration ten times and can therefore account but little for the striking increase immediately after transfusion.

So far no attempt has been made to ascertain mathematically the fate of the transfused corpuscles, though from inspection of the table that would not be difficult.

#### SUMMARY.

A method for reticulocyte counting is described. Evidence for the hæmopoietic stimulus by blood transfusion is given. So far this stimulus is found to be a strongly preponderant though not exclusive function of the transfused blood.

Erythrocyte counts cannot be relied on as evidence of blood regeneration since a rising count may occur while the reticulocyte count falls. This naturally occurs after liver treatment of pernicious anæmia in which the reticulocyte concentration falls to normal when red cells approach normal as a result of a purely physiological inhibition.

A rising erythrocyte count may simply be evidence of foreign red cells and autogenous red cells temporarily persisting from the initial regenerative stimulus of the transfusion.

#### ACKNOWLEDGEMENT.

For permission to obtain access to the case and to use my findings for publication, I am indebted to Dr. S. F. McDonald, who had the child under his care, and I here record my thanks to him.

#### REFERENCES.

- <sup>(1)</sup> A. Piney: "Recent Advances in Haematology," 1927.
- <sup>(2)</sup> R. W. Brookfield: "Blood Changes Occurring During the Course of Treatment of Malignant Disease by Lead, with Special Reference to Punctate Basophilia and the Platelets," *The Journal of Pathology and Bacteriology*, April, 1928, page 277.
- <sup>(3)</sup> E. J. Cohn, G. R. Minot, G. A. Alles and W. T. Salter: "Nature of Material in Liver Effective in Pernicious Anæmia," *Journal of Biological Chemistry*, May, 1928, page 325.

#### VINCA ROSEA: ITS EFFECT ON THE BLOOD SUGAR LEVEL OF NORMAL RABBITS.

By DOUGLAS H. K. LEE, M.Sc. (Queensland),

AND

W. R. M. DREW.

(From the Department of Anatomy, University of Sydney.)

#### History.

In December, 1925, one of us (D.H.K.L.) had his attention drawn to a patient whose condition was diagnosed as *diabetes mellitus* and who was reported to have been cured by the oral administration of an extract made from the leaves of *Vinca rosea*. His attention was also drawn to an article published in

the *Queensland Agricultural Journal* for February 16, 1925, by White,<sup>(1)</sup> setting out the claims made for this plant with botanical notes attached.

In January, 1927, other reputed cures were brought under his notice. Careful inquiries were then made concerning the previous case noticed and these lent favour to the idea of the efficacy of the plant.

In March, 1928, we commenced the experiment now to be described. At the time of carrying out this experiment we were unaware of those already made by Epstein.<sup>(2)</sup> Our results confirm his.

#### Experiment.

The experiment was designed to investigate the effect on the blood sugar level of normal rabbits of extract of *Vinca rosea* leaves administered orally.

Five rabbits were used in the experiment. Three of them had been previously handled elsewhere; two of them (including number 4) were wild. For about three weeks before the routine observations were commenced, all the rabbits were kept in separate cages the whole time. Every morning they were given ten cubic centimetres of tap water orally from a syringe. Twice a day blood was taken from the ear of each. Every evening, about 5.30 p.m., they were given about four hundred and forty grammes of lucerne. The administration of water and the taking of blood were interrupted on April 28, 29 and 30. The experiment commenced on May 3, 1928.

From May 3 to May 13 inclusive all five rabbits were kept in the cages and the following routine carried out. Between 8.30 and 9 a.m. each rabbit received five cubic centimetres of water orally from a syringe and it was made to swallow this. At the same time the cages were swept and any remaining lucerne removed. Between 10.45 and 11.15 a.m. a sample of blood was taken by one of us from the right ear of each rabbit. These samples were analysed for their blood sugar content. Between 12.45 and 1 p.m. a sample of blood was taken by the other of us from the left ear of each rabbit. These samples were analysed. About 5.30 p.m. four hundred and forty grammes of lucerne were fed to each rabbit.

The period of drug administration extended from May 14 to May 31 inclusive. This period falls into four subdivisions:

1. Stock infusion daily, May 14 to 17 inclusive. An infusion of the leaves was made at 11 a.m. on May 13. Thirty-two and a half grammes of leaves were cut up and mixed with 120 cubic centimetres of boiling tap water and allowed to stand for fifteen minutes. The mixture was then strained through cheese-cloth and the residue squeezed. The volume of the extract was made up to 150 cubic centimetres with tap water and 3.5 grammes of sodium bicarbonate were added. The infusion became darkened in colour. The infusion was kept on ice. The daily routine was the same as in the previous period, except that the infusion was substituted for water in the case of all rabbits except number 4.

2. Intermission, May 19 to 22 inclusive. Neither drug nor water was given to any of the rabbits

during this period, but blood samples were taken and analysed as usual. The cages were not cleared of lucerne till 10.45 to 11.15 a.m.

3. Fresh infusion twice a day, May 22 to 25. About 5.30 p.m. each day from May 21 to 24 inclusive five grammes of leaf were taken, cut up, added to twenty-five cubic centimetres of boiling tap water and allowed to stand fifteen minutes. The infusion was strained through cheese-cloth and the residue squeezed. Similar infusions were prepared about 11.35 a.m. each day from May 22 to 24 inclusive. Five cubic centimetres of the evening extract were fed to each of the rabbits except number 4 the next morning at the usual time in the usual way. Number 4 received the same quantity of water instead. The morning extract was administered in the same way between 11.50 a.m. and 12.10 p.m. to the animals which were the subject of experiment.

4. Fresh extract twice daily, May 25 to 31 inclusive. The routine of feeding was the same as in the previous period, but the preparation of the drug was different. Instead of being allowed to stand, the mixture was boiled for fifteen minutes after the addition of the leaves and the volume after straining made up to twenty-five to thirty cubic centimetres with tap water. Five to six cubic centimetres of this extract were fed to each of the animals experimented upon. Otherwise the routine was the same as in the previous period.

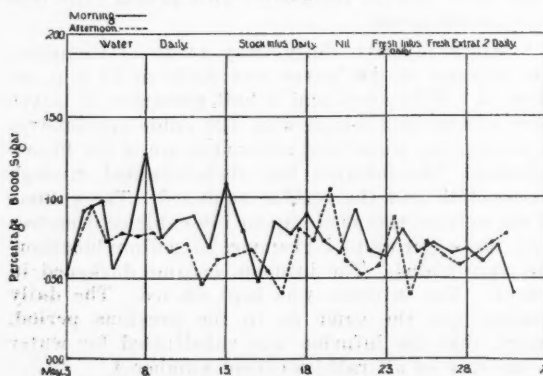
#### Technique.

The blood samples were collected from the veins of the shaved ears of the rabbits in 0.1 cubic centimetre pipettes and analysed by the method of Hagedorn and Jensen.

#### Results.

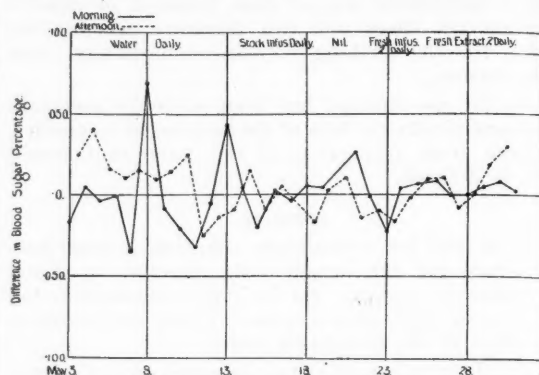
In the graphs the results of the analyses are summarized.

The first fact to be noticed is the great daily variation in the blood sugar level of normal rabbits. This renders it impossible to detect slight changes in the level as the result of experimentation without employing large numbers of rabbits and extending the observations under both normal and experimental conditions over long periods.



GRAPH I.  
Showing percentage blood sugar findings in four rabbits—Numbers 1, 2, 3 and 5.

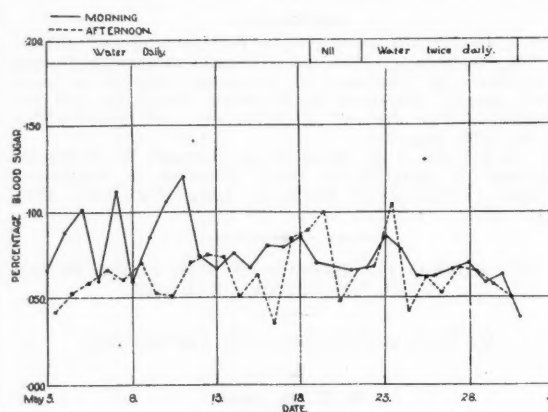
All the rabbits show a tendency to a gradual decline in the blood sugar level throughout the period of observation and this is seen in the control rabbit quite as well as in the others. This fall is possibly due to the gradual adaptation of the



GRAPH II.  
Showing difference in blood sugar percentage in four rabbits—Numbers 1, 2, 3 and 5.

animals to experimental conditions, with the consequent production of less adrenalin as a result of fear. This explanation receives some support from the fact that the fall is more pronounced in the morning graph and the rabbits received more handling in the morning, including the very disturbing process of forcible feeding. Further, this fall was best observed in numbers 4 and 5, which were the wild rabbits, and were slow to settle down to the routine.

The only animal which showed any fall under the exhibition of the drug was number 5. The nervous nature of this animal in particular combined with



GRAPH III.  
Showing percentage blood sugar in rabbit Number 4.

the fact that the fall was observable only in the morning graph and that the other three rabbits experimented upon showed no fall under the exhibition of the drug, renders this invalid as evidence of hypoglycemic producing properties in the drug. The

graph for the average of the four rabbits experimented upon shows only the gradual constant decline pointed out above which is unrelated to drug exhibition. A comparison between the averages for the four rabbits experimented upon and the figures for the control rabbit, although not statistically a fair comparison, shows only a fairly constant variation about zero.

#### Conclusions.

1. Rabbits appear to take a considerable time to settle down to routine conditions and to get used to the various operations of the experiment. They should be kept under strict experimental conditions for six weeks before normal observations on blood sugar levels are recorded to avoid this complication in the interpretation of results.

2. Owing to the degree in daily variation of the blood sugar level, observations under both normal and experimental conditions should be continued over long periods and a large number of rabbits should be used both for experimental purposes and as controls.

3. In this experiment we have failed to obtain any evidence that an infusion or an extract of *Vinca rosea* leaves, fed orally to normal rabbits, produces a fall in the blood sugar level, in spite of the fact that fairly large quantities were given.

With regard to the quantity given, the directions for human consumption as set out in the *Queensland Agricultural Journal* read:

Each day boil twenty-seven leaves in three and a half cups of water for fifteen minutes, then strain. Take one cup after each meal; one hour afterwards as much bicarbonate of soda as can be got on a sixpence in half a glass of warm water.

This is equivalent to 0.14 gramme of leaf per kilogram weight of animal daily. In the first period of drug administration we allowed about 1.5 grammes of leaf per kilogram weight of animal daily, while in the second and third periods of drug administration we allowed twice this amount. Hence the druged rabbits received ten and twenty times the proportional dose each day.

The negative answer to our inquiry does not mean much. It certainly does not disprove the claims made for the drug. Further investigation along other lines is required before anything definite can be said about them. The following general possibilities remain:

1. The patients recovering did not owe their recovery to the extract.
2. The condition of the patients recovering was not true *diabetes mellitus*.
3. The extract cures in a manner different from "Insulin," either (i) producing a fall in the hyperglycaemic but not in the normal subject or (ii) without producing a fall in the blood sugar at first.

The first possibility could be decided, in the absence of any other evidence, only by careful sifting and weighing of carefully recorded clinical

evidence taken in a large number of cases. This evidence would also help in considering the second possibility. The small series of cases studied by Nye and Fitzgerald<sup>(3)</sup> would tend to indicate that the answer lies within these two possibilities. The first alternative of the third possibility can be made the subject of laboratory investigation and has been studied by Epstein.<sup>(2)</sup> He found that it does not affect the blood sugar curve of experimental adrenalin hyperglycaemia. Corkill<sup>(4)</sup> confirms this finding in rabbits, but reports some delaying effect in dogs. Mills<sup>(5)</sup> and his assistants, working in Pekin, with an extract of plants rich in vitamin B obtained some interesting results in this respect. In a series of seven cases they obtained evidence that the extract lowered sugar excretion. Experimentally this extract possessed no power of lowering the blood sugar level in normal rabbits nor did it afford any benefit to depancreatized dogs. The second alternative of the third possibility is unlikely, but may require to be considered.

#### Acknowledgements.

We wish to express our joint gratitude to Professor C. W. Stump for the interest he has shown in the inquiry and for his generosity in placing his laboratory at our disposal and the payment of all expenses from the department. To C. T. White, Queensland Government Botanist, our thanks are also due for the supply of leaves.

#### References.

- (1) C. T. White: "Vinea rosea—A Reputed Cure for Diabetes," *Queensland Agricultural Journal*, February 16, 1925, page 143.
- (2) Epstein: *South African Medical Record*, Volume XXIV, 1926, page 35.
- (3) L. J. J. Nye and M. E. Fitzgerald: "Vinea Treatment of Diabetes," *THE MEDICAL JOURNAL OF AUSTRALIA*, November 17, 1928, page 626.
- (4) A. B. Corkill: "Vinea Treatment of Diabetes," *THE MEDICAL JOURNAL OF AUSTRALIA*, January 19, 1929, page 86.
- (5) C. A. Mills: "Treatment of Diabetes with an Acid-alcoholic Extract of Plants Rich in Vitamin-B," *American Journal of the Medical Sciences*, March, 1928, page 376.
- (6) C. A. Mills, Chang-Chu-Pin and Hsu Su-en: "Effects on Carbohydrate Metabolism of an Acid-alcoholic Extract of Plants Rich in Vitamin B," *American Journal of the Medical Sciences*, March, 1928, page 384.

#### AN INTRATRACHEAL ETHER APPARATUS.

By GEOFFREY KAYE, M.D. (Melbourne),

Honorary Anaesthetist, The Alfred Hospital, Melbourne;  
Honorary Research Worker, The Baker Institute,  
Melbourne.

THE present report is submitted in the hope that the practitioner who is occasionally called upon to administer an anaesthetic by the intratracheal route, or whose anaesthetic practice involves much moving from place to place, may find some assistance from an apparatus simpler and more portable than the heavy and costly stock machines.

The apparatus represents an endeavour to combine the simplicity and lightness of the Shipway apparatus with the means of giving an efficient intratracheal ether anaesthesia at will. It fits

easily into a light fibre shopping case (such as any manufacturer will supply for a few shillings), measuring 45 by 25 by 30 centimetres (18 by 10 by 12 inches), such space being sufficient also to contain the anaesthetist's gear and enough anaesthetic for any average administration. The weight of the machine and case is under six kilograms (about thirteen pounds). An additional advantage of the apparatus is that it may be used as a Shipway machine or as a chloroform inhaler equally well as for intratracheal ether.

The general construction will be readily seen from the accompanying diagram (Figure I). The ether chamber *E* is a rubber-stoppered 600 cubic centimetre (twenty ounce) bottle of rather wide design. Experience would suggest the use of a still larger bottle of yet wider diameter, as further obviating the risk of freezing of the ether during a long administration, though the present bottle gives little anxiety in this respect. Entering the chamber is a three-way tap *T*, similar to that used in the Shipway apparatus, but of wider gauge. In fact, all tubing used in the apparatus is of heavy nickel-plated copper of eleven millimetres (seven-sixteenths of an inch) diameter and was, together with the tap and all metal work, efficiently executed for me by Mr. Allan Grant, Collins Street, Melbourne. The tap *T* is so contrived that a stream of air, supplied from a glassblower's foot bellows equipped with a continuous action rubber bulb, can be directed at will through (a) the ether chamber *E*, (b) a chloroform chamber *C*, being a 300 cubic centimetre (ten ounce) rubber-stoppered bottle, having plated copper inlet and exit tubes traversing the cork or (c) both chambers together. By this means one can deliver pure ether vapour, pure chloroform vapour or a mixture of the two. Attached to the tap is a varnished cardboard scale, on which by a method of trial and error, it is possible to mark out six positions as follow: Pure ether, pure chloroform, ether and chloroform 50:50, ether with trace of chloroform, chloroform with a trace of ether, chloroform and ether 40:60. In this way much control can be exercised over the relative concentration of the vapours delivered.

The exit tubes of the chambers *C* and *E* are led to a Y-piece *Y*. This is admirably served by one of the nickelled Y-pieces used in a certain type of binaural stethoscope. Hence a short common lead tube (like all the connecting tubes of best pressure rubber of wide bore) passes to another Y-piece *Y*<sub>1</sub>, whence a short side lead connects with the manometer *M*. The manometer has a wooden back

piece and is secured to the common baseboard by a brass angled bracket. It presents no difficulty in construction. From *Y*<sub>1</sub> a further short lead tube passes to another Y-piece *Y*<sub>2</sub>, of which the side lead connects with a glass tube penetrating the cork of a small bottle *H*. This bottle contains mercury into which the glass tube dips, so forming a gas escape as in Kelly's apparatus. With the manometer and mercury escape protection is secured against excessive pressure inside the apparatus, just as in the large machines. From *Y*<sub>2</sub> the main lead is carried to a guard bottle *G*, being a 300 cubic centimetre (ten ounce) rubber-stoppered bottle with short copper inlet and exit tubes. It serves as a protection to the patient against condensation of the anaesthetic vapour or insufflated mercury droplets. From here the lead runs to a copper tube, 120 centimetres (nearly four feet) in length, wrought to a close spiral. This penetrates the rubber stopper of a standard vacuum flask *V*, which when filled with very hot water, will maintain the ether vapour at an adequate temperature throughout an

anaesthesia of average duration. From the coil a metre (three feet) or more of rubber pressure tubing passes to the patient.

The assembly is so clearly shown in Figure II that little description is necessary. The several bottles fit accurately into cups of plated

copper which are securely screwed to the common baseboard. The latter is of Queensland maple, easily worked and French polished, measuring 35.5 by 21.5 by 1.9 centimetres (fourteen by nine by three-quarters of an inch). It bears two small plated handles of stock pattern. The position of the several parts will be at once seen from the plan.

#### Method of Use for Intratracheal Anaesthesia.

Lacking the hardihood to attempt intratracheal chloroform anaesthesia, I have never used the chloroform bottle as such. I keep it empty when it becomes a means of giving extra air and the dilutions on the scale are to be read accordingly: "ether and air 50:50" instead of "ether and chloroform" and so forth.

Since a small machine in which air is bubbled through, instead of being blown across, the ether, gives a relatively small volume of relatively highly-concentrated vapour, this factor is of importance; steady pumping of the bellows being necessary to assure a good return airway. I have found, however, that at a set rate of pumping which, with a bellows having a continuous action bladder, is neither rapid nor laborious, the range of dilution given by the machine admits of excellent control of the depth of

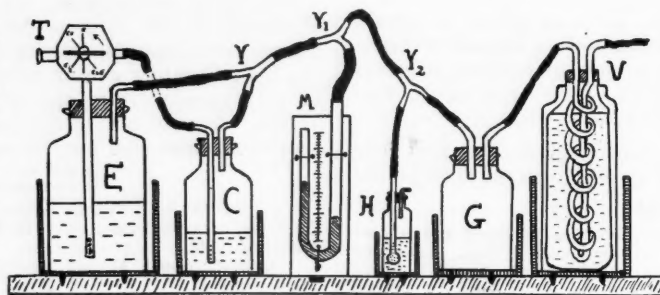


FIGURE I.

anæsthesia. Experience with the machine is here, of course, a virtue.

If the chloroform chamber be left empty, a controlled ether anæsthesia can thus be maintained. I employ the standard catheters, but an excellent and inexpensive introducer has been made for me by Messrs. Dixon and Sons, of Post Office Place, Melbourne. It has the dual merit of lightness and of working from the pocket battery handle of the Wappler-May ophthalmoscope, which includes a rheostat, a great saving in space and weight. At the conclusion of anæsthesia, the dial is set at "full chloroform," that is "full air," and adequate flushing out with air is obtained.

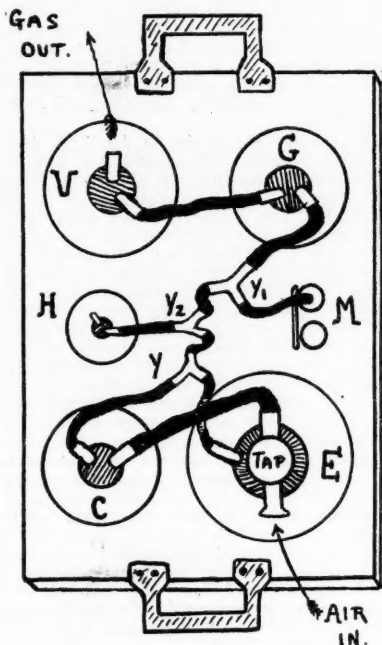


FIGURE II.

**Use as a Shipway Apparatus.**

Air is supplied from the foot bellows and the chloroform bottle is used as a chloroform bottle where necessary. Description is unnecessary, except to state that the vapour is given to the patient through a pair of soft rubber nasal catheters, size eight, English, connected with each other and the machine by one of the stethoscope Y-pieces mentioned. In other cases a Hirsch's airway or a flexible lead mouth tube may prove more convenient, according to the work in hand.

**Use as Junker Inhaler.**

The machine may be employed for all the purposes of a chloroform inhaler by using the chloroform bottle only, keeping the ether chamber empty as a source of extra air, as described under intratracheal ether anaesthesia. For this purpose the foot bellows may be quite well used, but it is apt to deliver a rather excessive volume of anaesthetic vapour and

one may readily employ a small rubber press bulb with continuous action bladder, familiar to users of the standard Shipway apparatus. One might mention that this press bulb, though sufficient when the machine is used as a Shipway, is not adequate to maintain intratracheal anaesthesia.

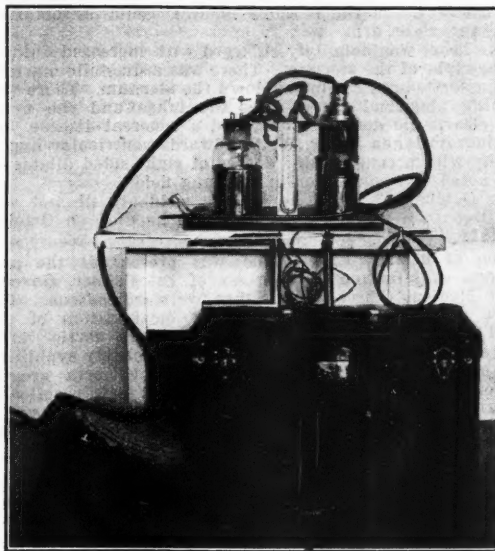


FIGURE III.

### Acknowledgement.

I am indebted to Dr. John Maclean for the photograph illustrating the assembled apparatus.<sup>1</sup>

## Reports of Cases.

## AORTIC DISEASE.

By L. W. DUNLOP, M.B. (Sydney),  
*Honorary Physician, Sydney Hospital.*

AND

G. E. HOBSON, M.B., Ch.M. (Sydney),  
*Medical Officer, Workers' Compensation Commission of  
 New South Wales.*

At the Workers' Compensation Commission of New South Wales on October 4, 1928, we examined a ship's fireman, *ætatis* thirty-one years.

He stated that on September 20, 1928, whilst shovelling coal he struck the blade of his shovel on a floor plate, the handle striking him on the chest. He was winded for a time and then resumed and carried on for three or four days when pain in the chest in the cardiac region,

<sup>1</sup> Mr. Allan Grant, of Collins Street, Melbourne, is manufacturing the apparatus as described, but with certain modifications of detail suggested by experience in its use, including an enlarged ether chamber and an all metal dial. He informs me that the unit, enclosed in a wooden cabinet and equipped with foot bellows, catheters and intranasal tubes, can be retailed at £14 14s.

passing to the right arm, and shortness of breath made him cease work. Later the pain passed from his chest to both arms on exertion.

On examination it was noted that the patient was a well nourished muscular man with a slight pallor. The pulse rate was 120 per minute increased to 128 with exercise and returned to 120 within one minute.

The systolic blood pressure was 110 and the diastolic 65 millimetres of mercury. These records were taken from the left arm. No pulse was perceptible at the right wrist and no blood pressure reading could be obtained from the right arm.

The heart was definitely enlarged with increased dullness to the right of the sternum. There was a diastolic murmur in the aortic area conducted down the sternum. There was nothing abnormal detected in the lungs and the urine was clear. He denied having had a venereal disease. In a skiagram taken by Dr. W. A. Edwards ventricular hypertrophy with a considerable degree of right sided dilatation was noted and congestion of the lung fields.

On October 23, 1928, he became suddenly ill and was admitted to a Sydney hospital where he died on October 24, 1928.

One of us (G. E. Hobson) was present at the *post mortem* examination by courtesy of Dr. Palmer, Government Medical Officer. The lungs were oedematous. The heart was enlarged with irregular cicatrization of the right posterior and anterior cusps of the aortic valve. There was advanced cicatricial disease, probably syphilitic, of the arch and ascending part of the aorta greatly encroaching on the coronary arteries and practically blocking the commencement of the innominate artery.

A further examination by Dr. Palmer showed that the left common carotid artery was completely blocked by a condition similar to that found in the aorta.

The liver was of the nutmeg variety and there was venous congestion. The spleen was enlarged with a thickened and partly adherent capsule.

The right kidney was small and atrophied and the left kidney enlarged. There was an excess of fluid in the brain.

Two features worthy of note in this case were:

1. The absence of the right radial pulse due no doubt to the occlusion of the innominate artery.
2. The complete occlusion of the common carotid artery which must have been gradual with the formation of a collateral circulation which was apparently symptomless.

#### HYDATID OF THE LIVER OF MANY YEARS' DURATION.

By H. I. HOLMES, M.D. (Melbourne), F.C.S.A.,  
Honorary Surgeon, Warrnambool Hospital,  
Warrnambool, Victoria.

CLINICAL notes of the following case seem to be sufficiently interesting to warrant reporting.

Mrs. B., *etatis* fifty-six years, gave a history of having been operated on for a hydatid of the liver when aged eight years; the operation in question was apparently aspiration by needle. She was first seen by me on September 30, 1917. Six weeks previously she had had sudden loss of vision in the left eye, which an oculist pronounced to be "thrombosis of the retinal vein." Urine examination revealed a trace of albumin and a few granular casts; nocturnal micturition occurred occasionally. The systolic blood pressure was 170 millimetres of mercury and the diastolic 110 millimetres. She stated that she had been subject to bilious attacks all her life; the vision was impaired, not lost. Two days later there was no albuminuria. Ophthalmoscopy revealed a large hæmorrhage in the macular area and other small scattered ones. On July 17, 1918, at night she was seized with acute abdominal pain with vomiting persisting all night, followed by tenderness and distension next morning. The pain was epigastric and the tenderness mostly near the umbilicus. On the second day I decided to operate. There was a good deal of ascitic fluid with a little lymph, the

omentum and mesentery were sown with small white granules, "fat necrosis." A diagnosis of acute pancreatitis was made. Near the dome of the liver were old adhesions; a band was divided. There was also a nodular surface thought to be the remains of the hydatid cyst aspirated over thirty years previously; the appendix was also removed. The abdomen was closed without drainage; a good recovery ensued.

Except for a minor matter in 1925, the patient was not seen again till April 30, 1927. She then stated that, though a martyr to bad headaches and retching prior to the operation, she had not had any since; she was now complaining that following a knock on the head three weeks previously she had felt stuffed up in the nose and giddy; she had been in bed most of three weeks. Tinnitus was present. Deviation of the septum to the right was noted; there was comparative deafness in the right ear. The pulse rate was 120; the systolic blood pressure was 200 millimetres of mercury and the diastolic pressure 120. The heart sounds were clear. The abdomen was normal. The urine was clear, but while the patient was under treatment in bed, hæmaturia was found to be present with a tender right kidney. On account of pyorrhæa the teeth were extracted under an anæsthetic. I saw her only once again, but she apparently made a good recovery and went for a holiday.

I was asked to see her again on April 26, 1928, as she was complaining of being "off colour" and hæmaturia was present with pains sometimes in the right renal region, sometimes in the left; the temperature was running about 37.8° C. (100° F.), the pulse rate was about 100. Under treatment a profuse scarlatiniform rash occurred on the trunk only (this I attributed to salicylates). Tests of the urine at times revealed a specific gravity of 1010 to 1014, albumin and blood were present, both varying in amount, but the blood diminishing and later the albumin increasing. Tenderness was present over the right kidney, less over the left. The Casoni test yielded no reaction on two occasions. X rays revealed a calcifying hydatid in the dome of the right lobe of the liver, the liver and diaphragm fixed, also an enlarged right kidney. Cystoscopy showed that both ureters were working well, but following an intramuscular injection of indigo-carmin no visible colouration was detected in half an hour and practically none was recognized in the urine subsequently. Methyl blue, however, given by mouth, appeared in two hours and persisted for at least two days. A urea concentration test revealed less than 1% in specimens up to three hours. On account of this operation on the hydatid was decided against. There was practically no improvement in the general condition; the amount of albumin fluctuated, but steadily increased. On September 3, 1928, the patient had threatened uræmia and died in a uræmic convulsion a fortnight later.

The special feature in this case is the length of time the hydatid had existed, for I am of opinion that the hydatid in the skiagram is the same as was originally aspirated forty-eight years previously.

Was the toxæmia which seemed to have affected the patient all her life connected with the hydatid and damage to the liver? I am inclined to the opinion that it was.

Is there any connexion between the renal condition and the condition of the hydatid and liver? One has to acknowledge the possibility; probably there was repeated absorption of hydatid toxins; the evidence of renal trouble extended over a period of at least eleven years.

#### PREPARALYTIC POLIOMYELITIS.

By MOSTYN POWELL, M.B., B.S. (Melbourne),  
Registrar, Children's Hospital, Melbourne.

AND

ALLAN GAVAN DUFFY, M.B., B.S. (Melbourne),  
Resident Medical Officer, Children's Hospital, Melbourne.

A.R., FEMALE, aged four years, was admitted to the Children's Hospital on January 28, 1929, at midnight. The mother stated that during the past thirty-six hours the

child had been very drowsy and feverish and had complained of headache and pain in the neck and back. She had vomited once. The symptoms had become more pronounced as the day progressed. The drowsiness had aroused the mother's suspicion. She was sent into hospital by Dr. Buller Allan and Dr. Catchlove with a provisional diagnosis of poliomyelitis or meningitis.

On admission her temperature was 38.4° C. (101.2° F.), her pulse rate was 120 and her respiratory rate 32 in the minute. She was bright and intelligent, cooperating in the examination as well as she could. Examination of heart, lung, abdomen and urine revealed no abnormality. The spine sign was very pronounced, the head being held back, the neck being very stiff. She could bend from the hips to pick up a toy from the floor, but though anxious to do it, could not bend the spine anteriorly. Amoss's sign was present. A diagnosis of the preparalytic stage of poliomyelitis was made. Ninety cubic centimetres of human convalescent serum, Group II, was given intravenously. Twelve hours later she was still drowsy, the spine sign was still prominent. Lumbar puncture was performed and fluid withdrawn and examined at once by Dr. Fone. Globulin was increased, chlorides were normal (720 per cubic millimetre) and the cells increased as follows: Polymorphonuclear cells 28, lymphocytes 37, red blood cells 12.

A further quantity of serum was administered, thirty cubic centimetres being given intrathecally immediately after removal of forty cubic centimetres of cerebro-spinal fluid. The temperature was normal by 6 p.m., 37.3° C. (99.2° F.) at 10 p.m. and subnormal thereafter.

During the next few days she was drowsy, had retention of urine for one day and on January 30 regurgitated food through the nose. This palate weakness cleared up in three days. She was sent to the after-care home on February 7. No other paresis could be detected. She could flex the spine completely and easily.

This case is reported to stimulate the recognition of poliomyelitis in the preparalytic stage when human convalescent serum is of value.

#### Acknowledgement.

We are indebted to Dr. Stewart Ferguson and Dr. Jean Macnamara for permission to publish this case.

### Reviews.

#### THE THERAPEUTIC USE OF ULTRA-VIOLET LIGHT.

THE third edition of "Ultra-Violet Rays in the Treatment and Cure of Disease," by Dr. Percy Hall, is definite evidence of the extension of the author's experience with this form of therapeutics.<sup>1</sup> The book now contains less matter purely descriptive of apparatus and more clinical information. Stress is laid on the individuality of treatment and the necessity for meticulous care, as actinotherapy is at present an art rather than a science. In the chapter on skin diseases the importance of the use of rays of various wave length is stressed and the valuable advice that a change in the source of ultra-violet light will produce the desired result in many conditions that have come to a standstill. It is noteworthy that the author now discountenances the use of ultra-violet light in the treatment of rodent ulcer and gives full merit to its use in X ray burns and alopecia, for certain types of which it is the treatment of election. Cases of osteoarthritis are quoted in detail and results described are excellent. Foci of infection which are responsible for "rheumatic" conditions of the fibrotic type can often be cured by treatment when they are situated in the maxilla or accessory sinuses. Hysteria is one of the conditions

in which the use of ultra-violet light is contraindicated, whereas in neurasthenia great help can be received from this type of radiation.

In surgical tuberculosis lies one of the greatest uses of the treatment, but it is still on trial in pulmonary tuberculosis. There is a grave danger that a latent lesion may be made to extend rapidly by faulty technique. The doses used have shown a tendency to be too many and frequent and too big and the consequent reactions have been harmful. Reaction must be avoided at all costs. If this care is exercised, cases of pleural infection and the localized and fibrotic types of parenchymatous tuberculosis respond very favourably. Hyperthyroidism responds rapidly and favourably. Metabolic diseases are favourably influenced. Infantile scurvy, rickets, spasmophilia, tetany and *laryngismus stridulus* are curable and gout, diabetes and obesity respond favourably.

The value of this book lies in its rational outlook. The author throughout insists on the administration of the recognized forms of treatment, using the ultra-violet light as an adjuvant in some conditions and as its main therapeutic agent in others. He sounds a warning against the uses of vaccines in conjunctivitis. Dr. Hall does not advocate ultra-violet light as a specific, but as a hygienic measure of wide utility.

WILLIAM HARVEY.

THE tercentenary of the publication of *Exercitatio Anatomica De Motu Cordis et Sanguinis in Animalibus* of William Harvey excited great interest and some enthusiasm not only among the compatriots of the illustrious physician but also in foreign countries. As evidence of this there lies before us a handsome volume, the English issue of a work printed and published in America.<sup>1</sup>

The first seventy-two pages are occupied by what appears to be an exact reprint of the original 1628 Latin edition, followed by two pages of *corrigenda*, for even three hundred years ago compositors were capable of misprints. The main portion of the book consists of Professor Leake's translation, occupying one hundred and thirty-two pages. He has provided us also with notes on the history of the discovery of the circulation and on modern additions to Harvey's work and also with a short discussion of previous editions and translations, of which latter, however, he omits one. There are also a chronology of Harvey's life and an index.

Professor Leake fully appreciates the extraordinary originality of William Harvey in his work on the circulation, but curiously enough continually harps on his conservatism in other matters. He has in a great measure followed the translation which Dr. Robert Willis made for the Sydenhams Society of London in 1847 and is delighted to have detected Willis in one slip, but admits the charm and accuracy of Willis's translation. We think he might have been content to employ Willis's translation throughout, except only for the correction of the one slip, for while his own succeeds in most respects in achieving his object to present a rendering of the classic into current English idiom, he frequently indulges not only in undignified colloquialisms, but also in solecisms which, however they may appeal to Californian taste, are offensive to the English eye.

On one other point also we find ourself in disagreement with Professor Leake. Possibly overawed by active antivivisectionists he asserts that Harvey rarely made experiments on warm blooded animals, except such as were caught wounded in the King's hunts. In support of this he goes so far as to translate *ex vivorum dissectione* in animal experimentation and in numerous other places to omit any reference to the fact that the animals were alive.

<sup>1</sup> "Ultra-Violet Rays in the Treatment and Cure of Disease," by Percy Hall, M.R.C.S. (England), L.R.C.P. (London), with introductions by Sir Henry Gauvain, M.A., M.D., M.C. (Cambridge), F.R.C.S., and Leonard E. Hill, M.B. (London), F.R.S.; Third Edition, 1927. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 254, with illustrations. Price: 12s. 6d. net.

<sup>1</sup> "Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus," by William Harvey, M.D.; with an English Translation and Annotations by Chauncey D. Leake; 1928. London: Baillière, Tindall and Cox. Royal 8vo., pp. 240, with illustrations. Price: 16s. net.

The work is excellently printed (we detected but one misprint), bound and produced. Its value is enhanced by excellent reproductions of three portraits of Harvey and a facsimile of the original title page and a photographic reproduction of Harvey's first note on the circulation made by him in 1616. Most of these have been reproduced by the courtesy of the Oxford University Press.

Although we cannot approve some words and phrases used in the translation, we heartily approve the production in a convenient form for modern readers of this celebrated book. For American admirers of Harvey it will probably fulfil the strictest possible requirements.

### ENCEPHALITIS LETHARGICA.

ALTHOUGH it is only ten years since von Economo first described *encephalitis lethargica*, a very extensive literature on this disease is now in existence. Frederick Roques, however, in his "Epidemic Encephalitis with Pregnancy, Labour and the Puerperium" presents for the first time the modifications which these maternal states and the disease may produce the one upon the other.<sup>1</sup>

This book is an expansion with much added material of an article by Roques which originally appeared in *The Journal of Obstetrics and Gynaecology of the British Empire*. His observations are based upon forty hitherto unpublished case reports and one hundred and seventy-one case records collected from the medical literature. The subject is very fully dealt with in all its aspects—etiology and incidence, possible modifications of the disease by pregnancy and *vice versa*, the relationship of parity, the effect upon the child, diagnosis and treatment and the association of pregnancy with the later manifestations of Parkinsonism.

With a very lively appreciation of the inadequacy of small groups of cases and statistical deductions therefrom, Roques has reached some very interesting although mainly negative conclusions. Thus pregnancy does not increase susceptibility to the disease, the symptomatology and course of the disease are not altered by pregnancy except that the mortality is probably increased, miscarriage, premature delivery and prenatal death of the foetus are commoner in infected than in normal women, labour is usually painless. The outlook for the child is grave, the combined fetal and infantile mortality being 46%, the common causes of this unfavourable issue being maternal death before delivery and premature labour. Children born living at term are healthy; there is some evidence of occasional occurrence of transplacental infection, but not of postnatal infection of the child by the mother.

An important and illuminating chapter is devoted to the difficulties in diagnosis that may arise from the similarity of the phenomena of *encephalitis lethargica* and of the toxæmias of pregnancy. As with other diseases complicating pregnancy, the conclusion is reached that artificial termination of pregnancy either by abortion, induction or Cæsarean section is not attended with the good results that follow more conservative treatment. When the disease enters upon a chronic phase and Parkinsonism is manifest, Roques clearly shows that pregnancy exerts a much more positive influence. Both early in pregnancy and after delivery the maternal condition is adversely influenced in 75% of cases. On the other hand, pregnancy is not usually affected by the concomitant presence of Parkinsonism. Because of these facts it is suggested that pregnancy should be avoided or artificially terminated in Parkinsonian women who show the slightest aggravation of their symptoms.

This book presents a thorough survey of a difficult subject and contains valuable information about and adequate

assistance in the treatment of an admixture of a morbid and natural condition either of which can and does give rise to difficulties that tax the clinical acumen and ingenuity of the attendant practitioner. Although primarily of importance to the specialist either in medicine or obstetrics, this monograph is of value to all classes of medical men, who will also find it written, compiled and produced in such a way as to afford pleasant and interesting reading.

### FRACTURES AND DISLOCATIONS.

KELLOGG SPEED is an American surgeon who is a recognized authority on fractures. The second edition of his text book on fractures and dislocations is therefore of considerable interest and import, collating, as it were, the soundest of modern views on the treatment of these injuries.<sup>1</sup> Written for the student and general practitioner, it is extremely thorough and goes closely into detail, especially in the early general chapters; where, however, it is a little difficult "to see the wood for the trees." It is particularly in the consideration of injuries of the individual bones and joints that the merit of the book becomes so apparent. Every variety of fracture and dislocation, however uncommon, is considered and all its possible variations. The main impression left on the reader is that Speed is calmly relating conditions and methods of treatment with which he himself is thoroughly familiar and of which he has had so much experience that he can definitely indicate what he considers the most satisfactory mode of treatment for each. He states in his preface that "every effort has been made to avoid fads" and in this lies the second chief impression of the book—that there is no "hot air." At the same time he makes judicious use of other surgeon's views and methods where applicable; particularly does he pay tribute to the teachings of Robert Jones. We are a little surprised, however, not to find any mention of Hamilton Russell in regard to fractured femur.

Apparently litigation as a sequel to the treatment of fractures is even a greater bugbear in America than in Australia, for warnings are continually thrown in regarding the avoidance of legal actions. It is advised that every fracture should be examined by X rays before and after reduction, a counsel not always so simple as it sounds. In this regard a fact, never understood by the general public and not thoroughly by many of the medical profession, is emphasized; that is that anatomical or absolute reduction of a fractured bone to its former position is the exception. Further, the causes of ischaemic paralysis are frequently mentioned, but criticism in this respect may be expressed in connexion with the treatment of fractured elbow. Here it is advised that the elbow should be flexed as far as possible and maintained in this position with strapping, without sufficient emphasis being laid on the dangers of this method, nor on the pain resulting therefrom. For treatment after reduction passive movement is condemned, but active movement in moderation and with much care and massage are recommended.

To anyone unfamiliar with the details of making plaster moulds and splints the concise directions and possible dangers described are particularly useful, especially when it is realized how few splints there are for which plaster cannot be substituted. Prior to the consideration of each individual bone or joint the anatomy, mechanism of injury and pathology are concisely described.

Statistics fortunately are not overdone; sufficient only to bring out special points are quoted. Most of the illustrations are pen and ink drawings of skiagrams which is a very effective plan; a number are photographs of war injuries and are not so clear.

Altogether this book is a high class work of reference on its subject and likely to be of value to any surgeon or general practitioner.

<sup>1</sup>"Epidemic Encephalitis in Association with Pregnancy, Labour and the Puerperium," by Frederick Roques, M.A., M.D., M.Chir. (Cantab.), F.R.C.S. (England); 1928. Manchester: Sherratt and Hughes. Royal 8vo., pp. 150. Price: 15s. net.

<sup>1</sup>"A Text-book of Fractures and Dislocations Covering their Pathology, Diagnosis and Treatment," by Kellogg Speed, S.B., M.D., F.A.C.S.; 1928. Philadelphia: Lea and Febiger; Sydney: Angus and Robertson, Limited. Royal 8vo., pp. 952, with illustrations. Price: \$11.00 net.

## The Medical Journal of Australia

SATURDAY, MAY 25, 1929.

### False Income Tax Returns.

THE world in general and the medical profession in particular have been deeply impressed in recent times by the prosecution and punishment of medical practitioners for offences against the income tax acts. The publicity given to any breaches of the law on the part of educated persons is usually so severe a punishment that further steps to deter others from committing like offences become unnecessary. Unfortunately several members of the medical profession have been guilty of dishonesty in making their returns required by the Income Tax Commissioners. It is not the duty of the medical press to preach morality or strict adherence to the letter of the law. But it is its duty to protest when defiance of the law by several members of an honourable profession threatens to bring that profession into disrepute. It has been pointed out in these columns on many occasions that members of the medical profession enjoy privileges and protection and in return are expected to give services to the public of a valuable kind. Commercialism is foreign to the ideals of the healing art; those who practise solely for gain, will inevitably lower the traditions of the profession and undermine its dignity. There is, however, a chasm dividing the tradesman in medical practice from the medical practitioner who records all his transactions and keeps his books of account with accuracy and care. The State determines that a certain proportion of each citizen's income is to be paid to it as income tax. The citizen may disapprove of this method of filling the treasury; he may criticize the incidence of taxation; he may deplore the fact that he is taxed on a higher scale than is his neighbour in another State. But his remedy does not lie in a falsification of his returns or in an attempt to evade his responsibilities. He must accept the law of the land and obey it. If he fails, he cannot expect

sympathy or pity when heavy penalties are imposed. He is aware of the consequences of his act.

The object of this message to the medical profession is to remind its members that they have no right to endanger the reputation of the liberal profession to which they have been admitted, by stupid and selfish attempts to defraud the State and thus to bring the whole profession into disrepute. We must remind members that the General Medical Council has in another connexion accepted the verdict of a court as sufficient evidence of infamous conduct in a professional respect and has removed the name of the miscreant from the register. If a practitioner who is found guilty of a felony and is sentenced to imprisonment, finds that his name has been erased from the official list of medical practitioners, surely the man who is punished for a deliberate act of dishonesty against the State, would have as little cause for complaint, if a medical board decided that he was not fit to enjoy the privileges accorded to medical practitioners.

It is not difficult to make a proper return of income on the forms supplied by the taxation authorities. A few of the details may demand some thought and a careful search among the records of the year's undertakings. In the year 1922 we published a helpful article by Mr. H. L. Cunningham and Mr. R. J. Stiffe, public accountants, on the provisions of the *Federal Income Tax Act*. An endeavour is being made to supplement this assistance to the busy practitioner by a detailed explanation of the acts in the several States and of the Federal act in its present form. It will be found, however, that this assistance will be useful only to those who are anxious to obey the law. By its means the clumsy expedient may be avoided of entering claims for exemption that may or may not be admitted. There is no harm in such experimental methods in income tax returns. If the Commissioners decide that a claim cannot be entertained, it will be disallowed. This will not mislead the authorities as to the amount of income earned or received and cannot be interpreted as an attempt to defraud the State. The thesis to which we have addressed ourselves, is one of immense importance to the medical

profession as a whole. It is to be hoped that no further prosecutions will take place. Should our hopes not be realized, it may be necessary to urge the legislature to amend the *Medical Acts* in such a manner that no member of the medical profession would dare to make a false income tax return.

## Current Comment.

### HÆMOCHROMATOSIS.

HÆMOCHROMATOSIS may be described as a condition in which a deposit of iron-containing granules is found in the liver and other organs together with cirrhosis of the liver and pancreas, pigmentation of the skin and occasionally diabetes. The association of bronzing with diabetes was first described by Troissier in 1871, but it was not until 1889 that the name hæmochromatosis was given by von Recklinghausen. von Recklinghausen chose this name because of the excessive amount of pigmentation present throughout the body and because he believed that the pigment was derived from the blood. Hæmochromatosis is a rare condition and one which presents a peculiar problem in pathogenesis. The association of primary carcinoma of the liver with hæmochromatosis, recently reported by Robert Donaldson,<sup>1</sup> brings an added interest. The patient was a man, aged fifty-nine years, who gave a history of loss of appetite and shortness of breath with abdominal pain and swelling during the preceding two months. Slight jaundice was present, but there was no bronzing of the skin. Ascites was present and paracentesis was performed on two occasions. There was no diabetes. A diagnosis of carcinoma of the liver was made. *Post mortem* examination revealed cirrhosis of the pancreas and liver. The liver, particularly the upper part of the right lobe, was studded with nodules of new growth. In the liver, spleen, pancreas and kidney were found histological changes characteristic of hæmochromatosis. The liver was the most heavily pigmented organ, the pancreas was next, the spleen contained much less pigment and the kidneys contained practically none. In the sections of the liver Donaldson describes irregular epithelial cell groups of three kinds: adult liver cells, young regenerating cells and malignant cells. These cell masses were generally separated from one another by strands of fibrous tissue. The liver cells were grouped together in irregularly shaped islets of varying size. Although there was a suggestion of liver cell columns, the lobule as such had ceased to exist. Practically all the liver cells contained pigment; the nearer the cell was to the periphery of the islet, the more heavily laden was it with pigment. Both the regenerating cells and the malignant cells contained no visible pigment granules. The malignant cells presented a variety of form. Some looked like the normal cells of regeneration, some were small

polygonal and angular and some formed large plasmodial masses. The small polygonal and angular cells appeared to have arisen as a result of the splitting up of the plasmodial masses.

The case described by Donaldson differs in some respects from those usually reported in the literature. There was no pigmentation of the skin and there was no diabetes. Diabetes is generally a terminal event and does not always occur. Its occurrence will obviously depend on the damage sustained by the cells of the islands of Langerhans either from direct damage or from secondary damage as a result of the cirrhosis. The pancreas in the case under consideration was "hard and very cirrhotic." Microscopical examination revealed definite fibrosis, the glandular tissue being cut up into islets of various sizes. Thin strands of fibrous tissue surrounded individual acini. The pigmentation of the epithelial cells was distinctly irregular. Many of them contained no visible granules and all grades of involvement were seen, some cells being completely obscured by the pigment. It must be concluded that the process had not advanced sufficiently far to involve the islands of Langerhans to any great extent. No suggestion is made as to why some pancreatic cells are involved more than others, but in regard to the liver, there is an explanation forthcoming. The greater involvement of the cells in the periphery of the islets points to the advent of the causative factor of cell involvement by way of the portal circulation. The non-involvement of the young regenerative cells may be explained by the fact that they had arisen to replace liver cells already killed by the disease process. Efforts at repair are generally recognized as occurring in liver conditions which are the result of a so-called toxic process. They are seen even in so acute a process as acute yellow atrophy. It must be presumed that, had the patient lived long enough, the regenerated cells would also have become pigmented, for there is no reason to suppose that they are essentially different from the cells which they replace. Reference will be made later to the non-pigmentation of the malignant cells.

As far as the pigmentation of the skin is concerned, Donaldson is of the opinion that it is probably dependent more on interference with suprarenal function than on deposits of iron in the skin and he points out that, as happens with the islands of Langerhans, the suprarenals may not be involved. In his patient the suprarenals were apparently healthy. It should be a simple matter to confirm this view by studying the suprarenals from the bodies of persons who have manifested pigmentation of the skin. In the same journal as that which contains Donaldson's report, is one by Hugh Barber of a patient with hæmochromatosis who manifested extreme pigmentation. G. W. Nicholson describes the *post mortem* findings, but makes no mention at all of the suprarenals.

Most writers are agreed that the pigment in hæmochromatosis contains iron. Donaldson accepts this view. In Barber's case G. W. Nicholson found

<sup>1</sup> *Guy's Hospital Reports*, 1929.

that the yellow brown pigment from the liver cells gave an intense Prussian blue reaction and he concluded that the pigment was hæmosiderin. Donaldson records no observations on this point. He discusses the source of the iron-containing pigment. He puts forward conclusive evidence to show that the early view of origin from an excessive destruction of erythrocytes is not tenable. The liver or more correctly the reticulo-endothelial cells of the liver and also of the spleen act as a storehouse for the iron that is liberated from disintegrated erythrocytes. The iron pigment which normally appears in the reticulo-endothelial cell, is in the form of dark brown granules of hæmosiderin. The granules in the liver in hæmochromatosis are larger and the iron is in a more firmly combined condition than in hæmosiderin. Donaldson refers to the view that the pigment in hæmochromatosis is derived from the daily breaking down of effete erythrocytes and instead of being reutilized for incorporation into new erythrocytes in the marrow is held up in the liver cells. The young erythrocytes in these circumstances would have to obtain their iron from the ingested food. He regards this as possible but unlikely. If this did occur, it would mean that the liver cells, unable to deal with the iron resulting from the breakdown of hæmoglobin, are nevertheless able to pass on iron from the food in a form more suitable for reincorporation into the young erythrocytes. He regards it as more reasonable to suppose that the iron present in the hæmoglobin exists in a form which can more readily be rebuilt into the maturing erythrocytes than the iron which enters the body from the intestinal canal. Experimental investigations have shown that the iron resulting from rapid and extensive hæmolysis is that which is temporarily stored in the liver and is rapidly reutilized as regeneration of erythrocytes occurs. Donaldson's conclusion is that if the iron in the liver in hæmochromatosis does not come from the normal breakdown of effete erythrocytes, it must be derived from the food. Theoretically there is another possibility to be considered and that is that the causative factor acting on the liver cells may induce what may be called an iron hunger in the hepatic cells and that iron is withdrawn from the muscles, bones, lymph, serum, fibrin and other body fluids to satisfy this demand. There might, of course, be combinations of either of these methods.

Cirrhosis is a common feature of hæmochromatosis. On the evidence available it must be concluded that cirrhosis is the essential factor. Donaldson suggests that hæmochromatosis is merely an extreme degree of what occurs in pigment cirrhosis. Various toxic substances are known to produce cirrhosis and it is easy to imagine and justifiable to postulate a substance which has the power of interfering with the iron metabolism of the liver cell and of setting up cirrhotic change. If cirrhosis be accepted as a fundamental feature of hæmochromatosis, the association of malignant disease is not difficult to understand. Further, it is a little surprising that the two conditions are not seen together

more often. Ewing has stated that cirrhosis is the chief predisposing factor in 85% of hepatomata and in 50% of biliary tumours. He has pointed out that the regeneration in cirrhosis may become excessive and neoplastic. Donaldson holds the same view. As far as the non-pigmentation of the malignant cells is concerned, it necessarily follows from the non-pigmentation of the regenerating cells from which they spring. Although some biochemical work has been done on this problem, it has not been very extensive. The iron of the body is present in such minute quantities that investigations will have to be numerous and will have to cover a long period of time before any useful results will be obtained. Although Donaldson is probably right when he states that the pigmentation is merely a side issue and that it has been allowed to dominate the picture and engross the attention, it is by biochemical research that light will be shed on the subject.

DR. ROBERTA H. M. JULL.

THE medical profession is accustomed to the appointment of some of its members to high places. These appointments are gained in the majority of instances in virtue of the scholarly achievements, the knowledge of the world and of human beings and the general ability of the individuals, not on account of technical knowledge and eminence in the world of medicine. It is with the greatest satisfaction that we have to call attention to the nomination by the Federal Council of the National Council of Women of Dr. Roberta H. M. Jull as the woman representative of the Australian delegation to the Assembly of the League of Nations. The Prime Minister has accepted the nomination and has appointed Dr. Jull to this important office. She will take her seat with her male colleagues at Geneva in September, 1929. Dr. Jull's right to recognition as one of the most prominent women in the Commonwealth cannot be challenged. She has been a member of the Senate of the University of Western Australia since 1914 and she has held office as Warden of Convocation for four years. In addition she has been a Vice-President of the National Council of Women and is the member representing Western Australia on the Health Committee of the International Council of Women. In 1926 she was elected President of the Australian Federation of University Women. Her position as Medical Officer of Schools in the Department of Public Health of Western Australia and that as Supervisor of Infant Welfare need no reference in this place. Neither is it necessary to recall that she was the second medical woman registered in the State, that she has been actively associated with the Perth Public Hospital and with various institutions in Perth for a considerable time. Her appointment is a happy one and it is certain that her contributions to the deliberations of the Assembly of the League of Nations in Geneva will be of great value.

## Abstracts from Current Medical Literature.

### DERMATOLOGY.

#### Tinea of the Scalp.

V. PARDO-CASTELLO, J. J. MESTRE AND E. RIO (*Archives of Dermatology and Syphilology*, March, 1929) give the result of the treatment in thirty-two cases of tinea of the scalp. Good results were obtained by the oral administration of protoxide of thallium acetate. Seven to eight milligrammes of the drug per kilogram of body weight were used. Thirty-one patients were apparently cured, one patient suffered from a recurrence because of the early reposition of the hair before the infected hair had been completely eliminated. A few children presented slight symptoms of intolerance, such as diarrhoea, sialorrhoea and pains in the legs. A severe reaction did not occur in any instance. It was noted that several days after the administration of thallium some of the hairs resembled the exclamation mark hairs of alopecia areata. These trophic changes in the hair may be of some importance in the ætiology of alopecia areata. In experiments on animals atrophy and parenchymatous degeneration of the thyroid, spleen and suprarenals were found. Thallium acetate appears to produce a temporary arrest of the trophic action of the endocrine glands, probably the thyroid, on the growth of hair. In conclusion attention is drawn to the fact that it remains to be demonstrated whether any permanent injury is inflicted on the endocrine sympathetic system and in the opinion of the writers X ray depilation is still the method of choice in tinea of the scalp.

#### Ætiology of Alopecia Areata.

C. S. WRIGHT (*Archives of Dermatology and Syphilology*, March, 1929) discusses the theories of the causation of alopecia areata with special reference to the effect of experimental nerve injuries. The oldest theory that the condition is due to a trophoneurosis was given its greatest impetus by the work of Joseph, who claimed that sectioning of the posterior root of the second cervical nerve peripherally to the ganglion or extirpation of the ganglion in cats or rabbits causes an alopecia similar to alopecia areata in man. Fay's work in sectioning various nerve roots to relieve pain in inoperable cancer enabled further observations to be made. The work of Fay which was corroborated by the author, determined that interference with the sensory and sympathetic nerve supply to the scalp does not cause loss of hair. The second theory, that of reflex irritation from diseased teeth, does not agree with the work of Head, according to which the zones affected by the teeth are definite with each tooth and do

not in any instance affect the scalp. At the same time focal infection may influence the fall of hair without producing a trophoneurotic change. It is the opinion of the writer that the condition is due to an irritative stimulation of the cervical sympathetic nerves producing a regional vasoconstriction with lack of blood supply to certain areas of the scalp.

#### Treatment of Pemphigus.

R. H. DAVIS (*Archives of Dermatology and Syphilology*, March, 1929) reports further upon the intravenous administration of iron cacodylate and the subcutaneous use of "Coagulin" in the treatment of pemphigus. Seven patients were treated. Sodium arsenate solution 2% and phenol 2% in distilled water were used hypodermically in from 0.5 to 1.0 cubic centimetre doses in some instances instead of iron cacodylate. Among the seven patients in this series four had clinical recoveries, one was improved, able to work and free from lesions for varying periods and two died. As a sedative bromide is contraindicated and phenobarbital gave the best results. Sodium arsenate solution is useful when the veins are small. In relapses there should be no hesitation in repeating the treatment.

#### Acanthosis Nigricans.

F. C. KNOWLES, D. M. SIDLICK AND J. B. LUDY (*Archives of Dermatology and Syphilology*, March, 1929) review the literature and discuss the ætiology of the papillo-pigmentary dystrophy known as acanthosis nigricans. It is the impression of the authors that the assumption that the adult type of acanthosis nigricans is dependent on malignant disease is not warranted. At the same time they do not wish to affirm that a coincident malignant condition is extraneous. Two fresh cases are studied and reported upon and from an examination of these it is suggested that tuberculosis of the suprarenal glands is a possible cause of the juvenile type of this disease. The authors consider that acanthosis nigricans is due to the excitation of toxæmia generated by such diseases as carcinoma, tuberculosis or syphilis or that sunlight acting on the enzymes in the skin is the causal factor.

#### Berberine in the Treatment of Oriental Sore.

B. M. DAS GUPTA AND B. B. DIKSHIT (*Indian Medical Gazette*, February, 1929) have investigated the action of berberine sulphate against *Leishmania tropica* in vitro and in persons suffering from oriental sore. Jolly in 1911 had unsatisfactory results from the treatment of oriental sore with a paste made from berberis. Varma in 1927 initiated the hypodermic use of berberine sulphate. He infiltrated the sore and reported favourably. Karamchandani in 1927 found berberine injections to be the most successful treatment for oriental sore. The authors found that the growth of *Leishmania tropica* on a Nicolle, Novy

and McNeal medium was inhibited by the addition of berberine sulphate in a dilution of one in 80,000. Emetine one in one thousand and "Stibosan" one in one hundred had no effect on the growth of the organism. Quinine bihydrochloride one in one thousand inhibited the growth of *Leishmania tropica*, but not when diluted to one in ten thousand. The injection of a 1% solution of berberine sulphate into the gluteal muscle of a rabbit was found to be followed by simple dilatation of vessels and oedema, but no leucocytic migration or necrosis. Treatment of oriental sore was carried out by means of local injections. The tissues round the lesion were infiltrated with one to two cubic centimetres of a 1% solution or 0.5 to 1.0 cubic centimetre of a 2% solution. The needle was inserted at several points just beyond the margin in order that the whole periphery should be attacked by the drug. Injections were repeated at intervals of a week. In all instances a complete cure resulted in two or three weeks. The drug is cheap and the solutions are very stable.

#### Rhus Dermatitidis.

H. BIBERSTEIN (*Klinische Wochenschrift*, January 15, 1929) describes his experiments with rhus dermatitis which is apparently not so common in Germany as elsewhere. Six varieties of rhus were investigated and it was found that the dominant variety causing dermatitis varied from year to year, probably due to differences in the season, type of soil and the variety of plant studied. The leaves were pulverized in oil and the resultant solution was found to be more active than the leaves themselves. Sensitization against a particular variety was found to differ from year to year, but once it was obtained, it remained effective for at least twelve months. It was, however, specific to one plant and did not protect against the other varieties.

### UROLOGY.

#### Restoration of the Female Urethra.

JEAN TERARD (*Journal d'Urologie*, September, 1928) publishes a description of a new operation for restoring the female urethra, devised by his chief, G. Marion. The operation is devised for the cure of the more severe type of injury when not only is the posterior wall of the urethra partly or wholly destroyed, but also in addition there is complete incontinence of urine. The operation is performed in two stages. The first stage comprises a suprapubic cystotomy to deviate the urine and a complete closure of the bladder cavity in the region of the urethra. To achieve the latter object the fistula is surrounded by a vaginal incision and the surgeon carries his dissection up

to the base of the bladder and liberates it all round, finally closing the bladder completely by invaginating purse string sutures in several planes. After an interval of two months the second stage is performed. In this stage a specially constructed curved cannula with trocar is made to puncture the mucosa just in front of the clitoris and to curve upwards and backwards below the *symphysis pubis* until it finally pierces the anterior part of the bladder floor. A tubular graft of mucosa completely separated from a suitable part of the vaginal wall is then moulded around a piece of No. 10 French rubber catheter and is drawn from the suprapubic fistula into the lumen of the cannula. The cannula is removed, the graft being left around the rubber tube which is fixed in position. About the tenth day the rubber tube is shed into the dressing and care is taken thereafter to prevent contraction of the tubular mucosal graft. About the twentieth day the suprapubic drain is removed and the bladder drained by catheter through the new urethra until the suprapubic fistula is closed and then natural micturition is reestablished. The method has given excellent results, the condition of six of the seven patients so far treated being satisfactory. The anterior portion of the new canal renders it longer to move around than with other methods. It is, moreover, sufficiently narrow and has behind it a good thickness of tissue containing muscle. All these anatomical conditions favour the prevention of incontinence of urine.

#### Treatment of Prostatic Hypertrophy.

J. FÜRSTENAU (*Deutsche Medizinische Wochenschrift*, September 28, 1928) analyses the results of X ray treatment of fifty-nine patients with prostatic hypertrophy and gives details of the routine treatment. They were divided into three groups—those with difficulty of micturition and not more than 50 cubic centimetres of residual urine (twelve patients), a second class with fifty to three hundred cubic centimetres residual urine (thirteen patients) and the third group with complete retention and eventually *ischuria paradoxa* (thirty-four patients). Renal efficiency tests were performed on thirty-seven patients. The blood pressure was raised as much as 220 millimetres of mercury, but varied considerably. After catheterization a fall was noted followed by a gradual rise to the previous level. All patients with symptoms of cystitis were given "Urotropin" and required to drink copious draughts of water with sugar added—50 grammes *per diem*—to combat acidosis. Potassium iodide was administered as a routine and great care taken to relieve the constipation present in every case. Patients with much loss of appetite were given a course of "Insulin" 10 units increased to 20 *per diem* lasting two or three weeks. Glucose was given intraven-

ously at the same time. A retention catheter changed every three or four days was used for all grades except the first. Bladder irrigation with 3% boric acid solution and one in a thousand silver nitrate solution was done once or twice daily in all severe cases. The patient was permitted to walk about with a clamp on the catheter which was released every half hour. Epididymitis was observed in one case only. Radiological treatment was commenced two or three days after admission irrespective of the presence of cystitis. Three fields were treated on successive days; 70% of the minimum skin erythema dose was used with a filter of one millimetre aluminium and 0.5 millimetre zinc, a tube six by eight centimetres in size, focal distance thirty centimetres and length of exposure six minutes. The first field treated was the perineum with the patient in the knee elbow position. Then the sacrum with the patient lying on his abdomen and finally the abdomen from in front. The testicles were protected in the majority of cases. In five patients with suspected carcinoma a full skin dose was given for nine minutes to each area. The only symptom following radiation was slight vesical and intestinal tenesmus. In two cases a smart hæmorrhage controlled by the catheter occurred. The average length of treatment was twenty-one days for the first group, thirty-eight days for the second and forty-nine for the third. Failure resulted in four and seven patients died from intercurrent complications. The others (83%) were able to pass urine freely and it was noted that a great reduction in the amount of night urine occurred. In the majority of patients the prostate was reduced one-third to one-quarter in size and had become much softer. Considering the mortality following operation in many elderly debilitated men the author considers that radiological treatment has much to recommend its more general use.

H. RUBRITUS (*Wiener Medizinische Wochenschrift*, November 10, 1928) considers that all patients with prostatic hypertrophy should be treated by operation unless some severe general condition prevents such interference. Catheterization is reserved for urinary retention, either acute or chronic, complete or incomplete. Occasionally ligation of the *vas deferens* will cause shrinkage in size of the prostate besides preventing infection of the epididymis from the constant use of the catheter. The author advises operation for all patients who experience difficulty in passing the catheter especially those with frequent attacks of acute retention, for patients with one hundred to two hundred cubic centimetres of residual urine and poor general condition, for patients whose condition is complicated by stone or diverticula or if malignant changes be suspected. Renal efficiency tests must be carried out in all instances in order to test

the rapidity of secretion as well as the specific gravity. The indigo-carmin test was occasionally employed, while if the blood urea was above sixty milligrammes, operation was contra-indicated. The operation should be done in two stages. The interval between them varies greatly according to the degree of bladder infection and the general condition of the patient. He prefers to use epidural anaesthesia combined with infiltration of the abdominal wall. Unless hæmorrhage be controlled, the cavity is packed with gauze to which is attached a ligature. A two-way tube is inserted and the wound carefully closed. Both tube and plug are removed in five to six days and a retention catheter inserted while waiting for the wound to heal.

#### The Kidney in Syphilis.

A. AVRAMOVICI (*Journal d'Urologie*, July, 1928) treats of the double influence of syphilis and of antisyphilitic treatment and declares that the kidney always suffers in a greater or less degree from both agencies during the course of treatment for syphilis. As a rule the evil consequences of a badly tolerated treatment do not make themselves manifest until at least four years after the end of the treatment. The renal lesions, due to the elimination of drugs are almost irremediable. Quite often an acute lesion becomes chronic and remains incurable. It is advisable that the eliminating power of the renal tissue should be continually observed during treatment and the latter should be ceased as soon as any considerable interference with renal permeability is recognized. During the course of syphilis the kidneys may pass through the whole gamut of anatomical and functional lesions right up to complete obstruction of the organ by gummatous lesions. The more prolonged the elimination of a spiro-bactericidal substance, the more is the kidney irritated or fatigued. Rapid elimination of such drugs is greatly to be desired. During treatment the surest method of avoiding renal intoxication is to alternate the various medicaments. Thus the alternation of arsenobenzol compound (rapid elimination) with mercury or bismuth (slow elimination) offers the possibility of using vigorous attacks without making the intervals between injections too great.

#### Chronic Gonococcal Cowperitis.

H. RIEM (*Zeitschrift für Urologie*, February, 1929) declares that clinical and histological studies have given such incontrovertible proof of the frequency of occurrence of latent chronic inflammation of Cowper's gland, that in intractable and relapsing cases of anterior gonorrhoea a regular examination of these glands should be made. Since subjective symptoms are lacking or quite uncharacteristic, the diagnosis must chiefly be made by palpation.

## Obituary.

### GEORGE ADLINGTON SYME.

It is given to a few men, a very few men, to reach the highest place in whatever sphere of life they are cast, to be leaders. Their fame is attained without any effort on their part, without even a determination to become eminent. It seems as if these men are destined to be great. It has long since been recognized that George Adlington Syme, surgeon, hygienist, sociologist, man of letters, was the leader of the medical profession in the Commonwealth of Australia. His sudden death on April 19, after an illness of less than one week's duration, has produced a profound sense of loss among the members of the medical profession. He held his position among his fellows on account of his wisdom, the strength of his character, his professional eminence, his intellectual qualities. Those who were proud to accept his leadership, today look despairingly at the empty chair, at the vacant post. On May 12, 1929, a large gathering of the members of his profession was held at the Medical Society Hall, East Melbourne, to pay tribute to this great man and to do homage to his memory. We have postponed the publication of this short record of his career in order that our notice may be accompanied by a record of the memorial service.

George Adlington Syme was born in Nottingham on July 13, 1859. His father, the late George Alexander Syme, and his uncle, the late David Syme, were well known in the world of journalism, the former as editor of *The Leader* and the latter as a prominent member of the literary staff of *The Age*. In 1863 his parents left England and settled in Victoria. George Adlington Syme was sent to Wesley College, Melbourne, where he soon distinguished himself by his ability to learn and by the ease with which he outdistanced his contemporaries. He gained prizes for mathematics, English, French and other subjects. In February, 1877, he matriculated at the University of Melbourne and entered the Medical School. From the first he gained honours. In his first year he secured second class honours; in his third year he again took second class honours and divided the exhibition; in his fourth year he secured first class honours and an exhibition and in his final year he gained first class honours in surgery, medicine and forensic medicine and an exhibition. He took his degree of bachelor of medicine in 1881 and of bachelor of surgery in 1882. He then served for a year as resident medical officer at the Melbourne Hospital. In 1883 he travelled to England and studied at King's College Hospital for the membership and fellowship of the Royal College of Surgeons of England. After having taken the M.R.C.S. he became clinical assistant at the Royal Ophthalmic Hospital, Moorfields, at the Central London Throat and Ear Hospital and at the Soho Hospital. The experience he gained as a young man in these special institutions proved particularly valuable to him in his later career. He obtained the fellowship of the Royal College of Surgeons in 1885. In 1887 he returned to Melbourne and was immediately appointed Demonstrator in Anatomy in succession to Mr. F. D. Bird, who had held this position together with William Moore from the year 1884. Moore resigned in 1888 and was succeeded in turn by Dr. Mollison, the late C. J. Shields and the late F. H. Langlands. George Adlington Syme held his position first as demonstrator and later as lecturer for eighteen years until 1905. In 1889 the late Harry Brookes Allen obtained leave of absence from the University to visit Europe and his professorial duties were shared between Syme, Moore and Dr. Mollison during his absence. Harry Brookes Allen resigned his position as Dean of the Faculty of Medicine and was succeeded by the late George Britton Halford, who had previously held this office. In the year 1888 young Syme had already attained a position of considerable importance in the medical world. His extraordinary grasp of men and matters, his fine perception of what was right and of what was desirable, his wide interests and ample knowledge marked him a man with an important future. Moreover in Melbourne the members of the Syme family were regarded with respect and

appreciation and each one realized that much was expected of him. George Adlington Syme made no special effort to live up to the intellectual level of his close relatives. At this period he was appointed pathologist to the Women's Hospital, Melbourne. In this branch of medical work he proved himself as efficient as in other branches. In 1888 Harry Brookes Allen was appointed President of the Royal Commission to inquire into the sanitary condition of the City of Melbourne and Syme was selected to fill the position of secretary. He was then twenty-nine years of age. From the year 1887 he had been honorary surgeon to out-patients at the Melbourne Hospital; he held this position for sixteen years, to the immense benefit of the patients who attended his clinic and to the advantage of the institution. In the following year he was appointed surgeon to the police force and then honorary surgeon to the Queen Victoria Hospital.

In those days the Faculty of Medicine at the University of Melbourne was very different from what it is at present. In some respects it had advantages that have since been lost. There was a chair of medicine, held up to 1887 by the late S. Dougan Bird and later by the late James Jamieson, and a chair of surgery, held by the late T. M. Girdlestone up to 1895, when Mr. F. D. Bird succeeded him. The school was relatively small in the 'nineties and the professorships of medicine and surgery were to some extent nominal rather than actual. The incumbents, however, were responsible for their departments and while their main duties consisted in lecturing, a coordinated effort was made to fashion the curriculum and to organize the teaching. In this work Syme took a part, long before he was admitted a member of the Faculty of Medicine. The effect of this early adaptation of modern methods of training is reflected in the high standard attained by the graduates in medicine who passed through the University of Melbourne in the last decade of the nineteenth and the first decade of the present century.

In 1897 George Adlington Syme was elected a member of the Council of the Victorian Branch of the British Medical Association. He had, however, been intimately associated with the affairs of the medical profession for some years before this date. In 1890 the second session of the Inter-colonial Medical Congress of Australasia was held in Melbourne under the presidency of the late Thomas Naghten FitzGerald. The late Harry Brookes Allen was the General Secretary and Syme and Sir James Barrett were appointed Associate Secretaries. From 1889 until 1898 or 1899 George Adlington Syme was editor of the *Inter-colonial Medical Journal*, a journal formed by the amalgamation of the *Australian Medical Journal* and the *Intercolonial Quarterly Journal of Medicine and Surgery* in 1896. In 1910 its title was again changed to the *Australian Medical Journal*. It was the property of the Victorian Branch of the British Medical Association. At the fourth session of the Intercolonial Medical Congress of Australasia held in Dunedin, Syme took an active part in a debate on the proposed amalgamation of the existing medical journals in Australia and New Zealand. The proposal was complicated by the suggestion that a medical association should be formed in Australasia. The desirability of establishing one "fully representative medical journal for Australia" was recognized and it was resolved to open negotiations with this object in view. Six years later a renewed attempt to call into being an Australasian medical association was effectively checked by the members of the sixth session of the congress at Hobart. Here again Syme took a prominent part in the debate.

As an editor Syme started with an advantage. Other members of his family had attained eminence as journalists and George Adlington Syme possessed all the qualities and attainments necessary for success as an editor. That he attained success is evident in the journal under his direction. It is true that with all the other activities claiming his time and attention he was unable to devote a great deal of time to the work associated with the publication of a monthly magazine. But he had the ability of rapid work, of quick thought and of clear expression of ideas in few words. Throughout his whole career he was known for his forceful utterances, his fearlessness in dealing with things that matter, his utter disregard for consequences when a principle was at stake. He took his editorial duties

seriously; not a trace of slovenliness can be detected in the pages of his journal. Later the work was taken over in succession by Dr. R. R. Stawell, Dr. J. F. Wilkinson, Dr. A. J. Wood and the late Alex Lewers, all of whom brought erudition and strong personality into their journalistic undertakings.

In 1903 he was appointed Honorary Surgeon to In-Patients at the Melbourne Hospital. Two years later he was appointed an additional examiner in surgery at the University of Melbourne and in 1906 he joined the Faculty of Medicine as the representative of his hospital. His knowledge of surgery and the allied sciences, his skill as an operator, his ability to diagnose and to form a judgement of pathological changes, his quickness in emergency and his intense interest in the welfare of his patients and of the students learning from him were at once remarkable and widely appreciated. That he was a great surgeon and a great master was apparent to every one with whom he came in contact in the wards and in the operating theatre.

The year 1908 stands out prominently in the record of the life and deeds of George Adlington Syme. He filled the office of President of the Victorian Branch of the British Medical Association. But a few years before the Branch had been a relatively weak body; the Medical Society of Victoria had had a membership of about three hundred in 1903 when the members of the Victorian Branch of the British Medical Association had then numbered approximately twenty. There was then lack of concord and a spirit of something akin to antagonism. Syme appeared in the rôle of peacemaker; with sweet reasonableness he conjured the members of the medical profession in the State of Victoria to combine in an endeavour to carry out the objects for which Charles Hastings had founded the British Medical Association. During his term of office a bond of closest union drew the two societies together. Some years later Syme became one of the Trustees of the Medical Society of Victoria. From 1908 until the present day the two bodies have become practically welded into one. In the same year the eighth session of the old congress, under the name of the Australasian Medical Congress, took place in Melbourne. The late Harry Brookes Allen was President and George Adlington Syme was Treasurer. Need it be stated that the moneys contributed for that session were wisely and well expended? Syme's year of office in the Victorian Branch was characterized by strength of administration and moderation in the exercise of control. His contemporaries had boundless faith in him and their respect of him increased as he became more and more closely associated with every phase of professional life.

Early in 1912 Syme was appointed a member of the Council of the University of Melbourne. Two years later the Medical School celebrated its jubilee and on April 30 there was held in the Wilson Hall a gathering of graduates and undergraduates in medicine of extraordinary size and of unequalled significance. Every generation of student life was represented; the scene was one of striking brilliance. A procession was formed of the members of the Executive Committee, of the members of the Faculty of Medicine, of the members of the Professorial Board, the Warden of the Senate, the members of the Council, including George Adlington Syme, representatives of the sister universities, the Dean of the Faculty of Medicine, His Excellency the Governor of the State of Victoria and the Vice-Chancellor. After the visitors had extended the congratulations from the Universities of Sydney and Adelaide, His Excellency the Governor had addressed the meeting and Harry Brookes Allen had spoken of the history of the Medical School, George Adlington Syme was called upon to say a few words of dedication of a portrait of Harry Brookes Allen by Phillips Fox. Syme lost no time in enunciating his thesis. He spoke of the lasting monument that Harry Allen had erected to himself, the pathological museum; many had rendered service to the University, but none with greater distinction than Harry Brookes Allen. Later in the afternoon other speeches were delivered; Dr. R. R. Stawell spoke of the upbuilding of the Medical School and Syme addressed himself to the clinical schools of Melbourne, a subject peculiarly fascinating to him. His account of the clinical school in the days of his studentship and the development of clinical teaching in

Melbourne makes profitable reading fifteen years after the jubilee ceremonies.

In 1912 the Federal Committee of the British Medical Association in Australia was formed and Syme was one of the original members representing the Victorian Branch. In the early years the meetings were somewhat irregular, since the outbreak of war interfered with routine work. The late William Thornborough Hayward was the first Chairman and George Adlington Syme was elected Vice-Chairman. In 1914 as soon as it was known that medical officers were required for the Australian Imperial Force, Syme offered his services in any capacity. Reference to this will be found in the message sent at our invitation by Dr. R. J. Fetherston. He left Australia with the Number One Australian General Hospital for Egypt with the rank of Lieutenant-Colonel. He was appointed chief of the surgical staff. He saw service at Gallipoli and was for a time on duty on the hospital ship *Gascon*. His work was hard; wounded men, men stricken with illness, men needing immediate surgical treatment were embarked in an endless stream. The conditions under which he had to work, were unfavourable and ingenuity and resourcefulness were needed to meet these emergencies. He wrote a clear account of the work for this journal (see *THE MEDICAL JOURNAL OF AUSTRALIA*, April 1, 1916, page 277). Syme was the right man for this service, but he became a victim of the terrible environment of warfare. His hand was infected, probably from some infected wound with which he had to deal. The sepsis was severe and he was at once sent to England to undergo treatment. After a time the danger to life passed, but it was long before he recovered the use of his hand. Fortunately for him and for his patients the fears of his colleagues that he would be permanently maimed proved to be groundless. At that time he was fifty-six years of age. After his convalescence he was appointed consulting surgeon to the Australian Imperial Forces at headquarters in Horseferry Road, Pimlico. Towards the end of 1915 he returned to Australia and on February 2, 1916, he was transferred to the Australian Army Medical Corps Reserve, with the rank of Honorary Colonel. He then acted as consulting surgeon at the Number 5 Australian General Hospital, St. Kilda Road, and at the Number 11 Australian General Hospital, Caulfield. During his absence from Australia George Adlington Syme's place in the Federal Committee was filled by Dr. L. S. Latham. Syme attended the Representative Meeting of the British Medical Association in 1915. After his return to Australia Syme again took his seat on the Federal Committee and in the absence of Hayward he was asked to take the chair. His conduct of the meetings was exemplary and it was the unanimous opinion of the members of the committee that his experience, judgement and helpful guidance were invaluable.

In 1918 a conference was held at the instance of the Deputy Director-General of Medical Services on military orthopaedic arrangements. George Adlington Syme was present on behalf of the Third Military District and his advice, opinions and suggestions were listened to with the greatest attention. The system that was ultimately adopted, was moulded largely on the findings of this conference. In the following year the Medical Advisory Committee of the Repatriation Commission was formed and Syme was one of the original members. The committee had the function of advising the Repatriation Commission on all matters involving a medical policy and of acting as a medical appeal board. We are informed that George Adlington Syme attended approximately four hundred meetings of the committee and examined the claims of a very large number of applicants for relief. He acted as Consultant Surgeon to the Repatriation General Hospital at Caulfield from the time this hospital was transferred from the Department of Defence. On a visit to England he carried out some valuable investigations on behalf of the committee.

Having attained his sixtieth birthday, Syme was required to retire from his office as Senior Honorary Surgeon at the Melbourne Hospital in 1919. He was appointed Consulting Surgeon. In December, 1919, he was elected for the second time President of the Victorian Branch of the British Medical Association. At the end

of his term he delivered a characteristic address, inspiring, encouraging and yet not altogether optimistic. Syme sought to unite the medical profession, to make its members realize that they had to give the best service to the community not only in the treatment of disease, but also in its prevention. During the year the Victorian Branch had been engaged in a dispute with the friendly societies and had met a very difficult situation with patience and the exercise of moderation. Syme's influence prevailed on many occasions when firmness in the maintenance of principles was needed or when compromise was justified. When he vacated the chair the end of the struggle was in sight and many of the larger orders had accepted the terms of the Wasley award.

Syme took a great interest in the reconstruction of the Australasian Medical Congress. He worked persistently to bring the congress under the controlling influence of the Branches of the British Medical Association in Australia and New Zealand. He recognized the insecurity of the old organization and he wanted to knit the medical profession firmly together in one great representative body. As the first session of the newly formed Australasian Medical Congress (British Medical Association) was to be held in Melbourne in 1923 and as Syme had been chosen President, William Thornborough Hayward determined to vacate the chairmanship of the Federal Committee so that Syme might occupy both positions. He was elected Chairman of the Federal Committee in 1922. He was made a Vice-President of the parent association. He thus held the chief positions in the medical profession in the Commonwealth.

Throughout his career he contributed largely to surgical literature and took part in innumerable debates on matters of surgical interest. More recently he directed much attention to matters concerning the prevention of disease and the preservation of the public health. In the Federal Committee he displayed interest, knowledge and constructive ability in connexion with the organization of the medical profession, with the part it should take as a whole in dealing with national matters, such as the reeducation of men injured in the war, with the attainment of a high degree of efficiency of the Naval and Army Medical Services, with the regulation of friendly society lodge practice, with the hospital question, with the attitude that should be adopted by the medical profession should national insurance be introduced and with many other subjects. His address as President of the first session of Congress was concerned with matters affecting the public health and demonstrated his breadth of vision and his understanding of the problems of hygiene and preventive medicine as applied to the Commonwealth. In 1924 the Federal Government appointed a Royal Commission on Health and one of the three nominees of the Government was George Adlington Syme. The report of the Royal Commissioners is still fresh in the minds of the medical profession. It is a document of vast importance and significance for the future of Australia. Many of the recommendations have already been adopted. Others will, no doubt, be put into effect in the near future. The ultimate result of the labours of the six members of the Royal Commission will not be fully apparent for many years to come. In this connexion as well as in many others Syme's work and influence will survive long after all his contemporaries have followed him into the great unknown.

In June, 1924, it was announced that he had retired from active practice. The Victorian Branch of the British Medical Association determined to establish a foundation to mark the appreciation of the medical profession of his enormous services to surgery, to the profession, to the community. Ultimately the foundation took the form of a triennial lectureship. A life-size portrait in oils was painted by Mr. John Longstaff and it now hangs as a perpetual reminder of a great leader, an ideal surgeon for future generations of medical practitioners to regard and emulate. About the same time His Majesty was pleased to create him a Knight Commander of the Order of the British Empire, in recognition of his extremely valuable services to the community, not only in Victoria, but also throughout the whole Commonwealth. The applause of the whole medical profession and of a large section of the

people of Australia rang out when the announcement was made that he had received the honour of knighthood. He received an honorary degree of doctor of letters from the Cardiff University in 1924 and the honorary fellowship of the American College of Surgeons. The honours bestowed on him, numerous and almost overwhelmingly insistent, were unsought and almost resisted. Perhaps his quiet, unassuming personality, his modest refusal to seek favours, his utter hatred of self-advertisement impelled others to shower recognitions on him that he had earned throughout his long and honourable career.

His last great creative act was the foundation of the College of Surgeons of Australasia. The idea was not his; he had at first to be persuaded that the institution of a new body would not weaken the power and authority of the British Medical Association on which he imposed his faith. But after he was convinced that the science and practice of surgery would be raised by this new instrument and that it could exist peacefully and usefully side by side with the British Medical Association, he threw his whole being into the work and met without flinching the scathing criticism and bitter attacks of some of the opponents of the College. The history of the foundation of the College is on record in the pages of this journal. Syme would not have had a single word elided. His integrity, his clear conception of the duty of a surgeon to his patients and to his profession forced him to stand firmly and wait for a general acceptance of his views. It came with surprising rapidity. As President of the College of Surgeons of Australasia he lived to see it gain recognition throughout the British Empire and throughout the English-speaking world. The College has sustained an immense loss, a loss that will long be felt. At both the first and the second annual meetings Syme spoke with his accustomed firmness and almost obstinate adherence to principles, especially when matters of ethics were under consideration. And when he spoke, the majority was prepared to follow the lead.

A very great deal has been left unrecorded; it would have been impossible to have it otherwise. His was a life so full of incident, so replete with action, so rich in intellectual adventure that more than a hundred pages would be needed for a full account of his achievements. Of the man himself a few words must suffice. He was usually silent, almost stern, almost monosyllabic. He could be angry with those who displayed stupidity or cunning. He was quite fearless and when he deemed it necessary he could be severe in his criticism. At times he surprised his audience with his wit and happy sociability. His rare smile was delightful, but those who knew him well, were aware that he was kindness itself and delightful in his friendly feelings. He was of an artistic temperament and an ardent lover of things beautiful. He was a wonderful teacher and his pupils almost worshipped him. As a host no one could be more charming, no one could be more thoughtful. His life comprised largely of serious things, but frivolous pleasures found their way through many crevices and shed a relieving light on his apparently austere personality. There was no pose about him; he was transparently honest in all his actions and thoughts and even in hot controversy his opponents held him in respect.

Syme has gone from us after a long and valuable life. He had passed the age of retirement and yet a few days before his death he was virile, forceful, young in mind and as competent as ever. Despite his years he was too young to be spared. Those who could boast of his friendship and who were privileged to have come into close touch with the master, have a heavy responsibility on their shoulders. They have to maintain the unassailable standard that governed all his actions. It must be a considerable solace to his widow, his son and his three daughters to know that the whole medical profession shares their grief and will continue to cherish his memory as its leader, master, friend.

Sir Henry Newland writes:

True though it be that "the doors of death are ever open," the members of the Federal Committee had not the slightest inkling, when they bade him "good-bye" at the

close of the last Melbourne session, that their Chairman, Sir George Syme, was already standing on the threshold. He entertained the Committee at luncheon on the last day of the meeting and appeared to be in the best of health. I lunched with Sir George Syme at the Melbourne Club on the following day and I remember the dish he ordered caused the suspicion to cross my mind that he was guarding his blood pressure. We afterwards walked to the new office of the College of Surgeons, a few doors away, and inspected it. I remarked what an excellent choice had been made and Sir George replied: "Yes, but it means more work for me." Alas! next day he was struck down at the post of duty.

My earliest recollection of Sir George Syme carries me back twenty-five years to the time when he was surgeon on the honorary staff of the Melbourne Hospital with Fred Bird, Charles Ryan and Stirling. At a visit to the hospital in those days I watched him perform a gastro-enterostomy with deftness, simplicity and ease. This slight acquaintance was extended considerably on the outbreak of war in 1914. We embarked together in the transport *Kyarra* and during the voyage to Egypt our friendship and my respect for him grew.

After the war our paths did not cross again until I took my seat on the Federal Committee under the chairmanship of the late Dr. Hayward. Sir George was a colleague and he always presented the views of the Victorian Branch of the British Medical Association with ability, clearness and the necessary emphasis. These qualities and the respect of his colleagues for his sterling character marked him out as Dr. Hayward's successor when the chair became vacant. In this position his wisdom and the judicial trend of his mind were of the very greatest value in the deliberations of the Federal Committee. Each member felt that Sir George was indeed a "very present help" to him. But the respect for Sir George Syme within the council chamber extended far beyond its walls and enabled him to present the views of the medical profession in Australia to the highest in the land with the assurance that these views would receive if not sympathetic, at any rate the fullest and fairest consideration. Further, it was the universal respect in which he was held that enabled him to secure sturdy support in the difficult task of founding the College of Surgeons of Australasia.

It is very doubtful indeed whether success would have been achieved without him. It was fitting that Sir George Syme should become the first President of the College, an office in which he confirmed himself in the esteem and affection of the Fellows.

His occupancy of high place and the manner of his conduct therein impel me to quote, as I grieve at his passing:

No post the man  
Ennobles; the man the post.

Dr. R. H. Fetherston writes:

When I first went to a public school in 1875 George Syme was in the matriculation class. A few months later my joy was unbounded when the school was given a half holiday in honour of Syme having won an exhibition at that examination. How the school cheered! Many a time since then, perhaps in a less demonstrative way, have I felt just as proud of Syme and of his work. Some ten years later in the 'eighties we met in London, both of us doing post-graduate work. I remember introducing myself as an Australian to the late Dr. Tom Robinson at Saint John's Hospital, Soho. He immediately asked me if I knew G. A. Syme, of Melbourne, remarking that Syme was the soundest and most thorough young medical man who had ever entered that hospital. High praise from a stranger, but Robinson had judged his man well, for sound and thorough with the addition of honest were the outstanding traits in Syme's life work.

A few weeks after the outbreak of the Great War in August, 1914, Australia was asked to raise hospitals proportionate to the combatant troops going forward. It was my duty to call for volunteers. The first morning the call was made Syme volunteered unconditionally for any position he could fill—no question of rank or pay. I at once published the acceptance of Syme's offer. He showed

the way to the other leaders of the profession who were in doubt as to their position, and within a few days more were offering than could be accepted. He proceeded on service with the First Australian General Hospital to Cairo as Senior Surgeon and was transferred to a hospital ship after the landing at Gallipoli. While doing this work his hand was infected and when I met him in London in 1915, he was an invalid with a septic arm and hand. The muscles were hard, stiff and matted, fingers fixed and contracted. I thought and he feared that his days as a surgeon were over. His determination and perseverance ultimately overcame the disability and in later life few knew of any trouble, the result of war service. Invalidated to Australia, unable to operate, he acted as surgical consultant to the Victorian war hospitals. He was unsparing and unceasing in his work. At the end of the war he was recommended for high honours.

With Stawell, Syme and I were the delegates from Victoria to the original meeting called by South Australia, which resulted in the formation of the Federal Committee. He was elected as an original member and worked and pondered often as to the best way to bring the then disunited profession of Australia together. An ardent sub-worker of Hayward, the first chairman, and later himself as chairman he presided over representatives of a friendly, trustful and united profession. He had always wished to enlarge the powers of the Federal Committee and to give members of the Association more interest in Federal matters. Almost his last words in an official capacity were on this subject.

Syme's death has created a blank in the profession in Victoria which will be very hard to fill.

#### Memorial Service.

A special meeting of the Victorian Branch of the British Medical Association was held on Sunday, May 12, 1929, at the Medical Society Hall, Albert Street, East Melbourne, to pay homage to the memory of George Adlington Syme.

The following visitors were present: Sir Neville Howse, V.C., K.C.B., K.C.M.G., Minister of Health and Repatriation, The Honourable S. S. Argyle, Chief Secretary and Minister for Health of Victoria, Mr. S. Maugher (Australian Church), Dr. A. L. Kenny (College of Surgeons of Australasia), Mr. A. H. Teece (Melbourne Hospital), General T. A. Blamey (Victorian Police), Colonel J. M. Semmens (Repatriation Commission), Mr. George Dickenson (Old Wesley Collegians' Association), Mr. E. H. Wreford (Wallaby Club), Dr. L. S. Latham (The Melbourne University Association), Mr. Thomas Brentnall (The Melbourne Repertory Theatre), Mr. Alan Newton (New Zealand Branch, British Medical Association), Dr. R. Marshall Allan (Queensland Branch, British Medical Association), Mr. Bonnin, Mr. G. M. Oxer (Medical Students' Society Committee), Mr. Harold Berry, Mr. Guy Berry, Mr. Geoff. Syme, Mr. Herbert Syme, Mr. Oswald Syme, Mr. Francis Syme, Mr. Bert. Lormer.

Mr. B. T. Zwar, the President, said:

The Council of this Branch resolved to call this special meeting because of the great work done for and the high position held by Sir George Adlington Syme in the British Medical Association.

It was considered that this meeting would provide an opportunity to express the high value placed upon his work and his personality in the Association throughout Australia and New Zealand.

I must first of all convey apologies for the unavoidable absence from this meeting of Dr. Arthur Syme, Mr. Hugh Syme, Sir William McPherson, the Premier of Victoria, Councillor Harold Luxton, the Lord Mayor of Melbourne, Sir John MacFarland, the Chancellor of the University, Professor Berry, the Dean of the Faculty of Medicine, the Reverend Chas. Strong, Mr. Bremner Lewis, the President of the Melbourne Hospital, Mr. Agar Wynne, the President of the Melbourne Club, the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, Dr. Felix Meyer, Dr. R. H. Fetherston, Dr. Herbert M. Hewlett, Dr. Long, of Bendigo.

Today, then, we have met in the shadow of a deep sorrow to pay a tribute to the life of a great citizen. The

death on April 19 of Sir George Adlington Syme removed a great figure in the public life of Victoria and in the medical life of Australasia. To testify to the wide range of his influence there are present representatives from South Australia (Sir Henry Newland) and from Tasmania (Dr. Gregory Sprott). Both of these, moreover, are members of the Federal Committee of the British Medical Association in Australia, whilst the New Zealand Branch of the British Medical Association is represented by Mr. Alan Newton and the Queensland Branch by Dr. Marshall Allan. There are in addition messages which have reached us from our sister States and from the Dominion of New Zealand. Let these pay their tribute.

The following cable messages have been received.

New Zealand Branch, British Medical Association, deeply regrets death of Sir George Syme. Send sympathy to Lady Syme and family. All members appreciate his work for humanity. He was an honour to his profession.

J. S. ELLIOTT,

President.

DONALD MCGAVIN,

Chairman of Council.

The Medical Faculty of the Otago University desires to express its regret at the death of Sir George Syme and its sympathy with Lady Syme and her family.

FERGUSON.

New Zealand Fellows of the College of Surgeons of Australasia deeply regret the loss of their President whose sterling abilities, high ideals, integrity of character and self-sacrificing industry have done so much to raise the standard of surgery in Australia and New Zealand.

FERGUSON, BARNETT, MCGAVIN.

The New South Wales Branch of the British Medical Association has sent the following tribute.

The members of the New South Wales Branch of the British Medical Association claim it as a melancholy privilege that today they should be allowed to pay respectful tribute to the life work and character of an eminent Australian. With you in our sister State we mourn the loss of a most distinguished representative of medical science and practice in the person of the late George Adlington Syme. Like you, we grieve today that this place shall know him no more and we join with you in conveying to his widow and family our most sincere individual and collective sympathy in the sorrow that has fallen upon them by the loss of the husband and father.

We take this occasion to place on record our appreciation of his industry and capacity as a former teacher of anatomy and surgery in the University of Melbourne and as a member of its Council. We bear witness, if that be necessary, of our high regard for his conscientious service to the citizens of your State in placing his profound knowledge of the science and great skill in the art of surgery at the disposal of all to whom it might be useful. We thank him for his unstinted effort in using his splendid talents and great personal influence to bind us together as a united profession for better public service thereby increasing our value in the eyes of the community. We feel that we owe to him a debt that we can never pay for his unremitting labours in wise and honourable leadership whilst Chairman of the Federal Committee and we remember with pride the efficiency, tact and generosity which adorned his presidency of a recent Australasian Medical Congress.

From his arduous work as Chairman of the Royal Commission on Health we look forward with expectation to the employment of medical science as a more efficient factor in securing the welfare of the people of Australia. We shall not forget that in the last years of a busy life he devoted his energy, wisdom and experience to raising the standard of technical skill and surgical morality in that specialty of which he was such a distinguished exponent, whilst working towards the establishment of the College of Surgeons of Australasia of which he became the first and well-beloved President. Nor do we forget that when the world was at war he offered himself unreservedly in the service of our country, humbly performing whatever task might have been set him as a soldier of the King.

Death cometh to all and the time and manner of his passing no man can tell. To George Adlington Syme it came as he lent his welcome presence to a gathering at which it was felt that the notable and goodly influence of his life and work would be helpful to the generation that was following. In his case death is associated with the most honourable traditions of an ancient and noble profession, with a knowledge of work well done and much accomplished, with the affectionate regard of his medical brethren and with a public esteem that had extended from his native land to the centre of our Empire. In life he was rewarded by his King with temporal honours richly deserved by virtue of the quality of his character and the wealth of his service to his fellow man. In death we also do him even greater spiritual honour, in that affection for his memory shall remain in our hearts as an inspiration to emulate his splendid example.

The passing of Sir George Syme is one of the greatest calamities that has befallen the medical profession in Australia within my recollection. It has been my privilege to be associated with him in several of the advance movements within the profession, notably the work of the Federal Committee and the inception of the College of Surgeons of Australia and New Zealand.

We owe Sir George Syme an unforgettable debt of gratitude for his sound judgement, keen insight and right mindedness, which many a time pointed the way to sane, right and desirable action.

His wisdom in council was unfailing. He was a silent man, but after much debate around a committee table, he would incisively sum up the argument and place his finger upon the salient feature of the proposition.

He was a lovable man. When one penetrated the shell of an apparently austere demeanour which hid the gold below, and gained his confidence, one found within a warm, kindly nature, glowing with love of his fellow men.

He possessed a sunniness of nature, a largeness of heart and a love of all that was good and noble.

Above all I think he cherished aspirations for an ennobled and honest race of medical men who would carry the torch of learning and high ideals into all the work of their lives.

Who so generous as he?

After a long and honourous professional career, when he had retired from the cares and worry of practice, he never spared himself in his work for the uplift of the profession, but lavishly spent the evening of his days in the service of the profession which he adorned and loved so well.

Syme could be an angry man. It was interesting to see how his anger blazed at some tale of baseness or wrong doing in a professional sense. And he did not suffer fools gladly. His own judgement was so sound and keen that he did not readily tolerate loose and shallow thinking.

Victoria and Australia were fortunate that they possessed a man of such outstanding honesty, vision and nobleness of soul, to point them towards the highest peaks of altruism, whilst his wisdom, long experience and practical mind made him a wonderful guide in the mazes of many a difficult situation.

I should sum up Syme's characteristics as I saw them, as honesty, wisdom, altruism, generosity and loving kindness. "We shall not soon see his like again."

The hearts of all who loved Syme, go out to that faithful friend of his heart and home who was his inseparable partner for so many years, and to the young people who were so happy in his love.

WM. N. ROBERTSON.

Finally may I be permitted to sound a personal note?

It has been my privilege to have served under Sir George Syme as a student; later whilst he was senior surgeon to the Melbourne Hospital to have corresponded to him on the surgical out-patients' staff of that institution; to have been associated with him during a very critical period of his active service in the late war and finally to have been

associated with him on the Council of the Victorian Branch of the British Medical Association and on the committee of management of the Melbourne Hospital. It is now my sad privilege to add my tribute to his distinguished services as a teacher, surgeon to a public hospital, army surgeon, counsellor and committee man and president of one of our great public hospitals.

As a teacher Sir George Syme has rendered eminent services to the advancement of medical education and medical science in Victoria and in Australasia.

Though the buildings of the Medical School of the University of Melbourne were completed in 1864 and medical students had been attending lectures at the University during the previous two years, it was not until 1887 that the regulations of the University made proper provision in the medical curriculum for clinical and tutorial instructions.

It is this period that marks the commencement of Sir George Syme's influence on medical education in Victoria. Mr. Syme had then just returned to Australia enriched with experience of the methods of teaching in the big medical schools of Great Britain. Shortly after his return he had been appointed a demonstrator and examiner in anatomy in the University of Melbourne and honorary surgeon to out-patients at the Melbourne Hospital.

For eighteen years he rendered most valuable service to the department of anatomy as demonstrator and lecturer, whilst his active association with the clinical school of the Melbourne Hospital as teacher, lecturer and examiner continued until 1919, a period of thirty-two years, whilst after 1919 until his death he continued his influence on medical education as a member of the Council and of the Faculty of Medicine of the University of Melbourne.

He was a great teacher in the wards of the Melbourne Hospital, most conscientious and deliberate in making his rounds and in his response to emergency calls; careful in coming to an opinion, an opinion which generally proved correct; beloved alike by patients, students and staff.

His influence in the medical school was always for the highest ideals. By his example he set a very high standard of professional honesty. Any student at all fitted for the medical profession could not help but imbibe and be influenced by his high ideals. He laid great stress on the importance of clinical work and clinical teaching. He regarded this as the crown of the whole system of medical education.

His great services during the war are well known to you all. My closest association with him during this period followed immediately upon the acute stage of that very serious septic infection which during May and June of 1915 had brought him very, very near unto death. I knew that during this acute stage he had had to undergo tremendous hardships, such hardships indeed that one still shudders to think of them. But never a word of resentment or recrimination came from his lips, but only excuses for the conditions which made possible his unfortunate experiences. It was just typical of the greatness of the man. And even at this stage, sick as he still was, his thoughts seemed always bent on how he could best help and benefit others. Truly he revealed himself as the most unselfish man it has ever been my honour to know.

On the Council of the Victorian Branch of the British Medical Association he has always been a pillar of strength, whether as an executive officer or member of the Council. He was always most regular in his attendance and his opinion and advice were valued by his colleagues, not only because of his sound judgement and experience, but because these were the result of much thought, influenced by the highest ideals and given with absolute impartiality, unselfishness and fearlessness.

The same unselfish devotion he brought to bear on his duties as a member of the committee and President of the Melbourne Hospital. He loved the institution with which he had been associated in so many ways over a period of more than half a century—as a student, house surgeon, surgeon, consulting surgeon and president.

There are many other spheres of interest besides those to which I have referred which mourn the loss of Sir George Syme's guiding influence.

Since his retirement from active practice he has enjoyed little leisure, for the confidence and trust placed in him had become so universal, commanded such an influence, that his services were most eagerly sought after; and he was too generous, too public spirited, to say no, if he could possibly say yes.

Surely it is no wonder then that men and women all over this State and throughout Australasia felt grieved and bowed their heads in sorrow when they heard that this distinguished, devoted and unselfish man had passed away.

Those who knew him, will testify that he had lived up to the late Sir William Osler's three ideals, "to do the day's work well and not to bother about tomorrow, to act the Golden Rule, as far as in him lay, towards his professional brethren and towards the patients committed to his care and to cultivate such a measure of equanimity as would enable him to bear success with humility, the affection of his friends without pride and to be ready when the day of sorrow and grief came to meet it with the courage befitting a man."

Death has robbed us of a distinguished champion and friend of all that is good and noble. Though he has gone, his influence will live. As a tribute to his memory let us foster his ideals.

I have spoken in virtue of the position in which circumstances have placed me. I greatly value the privilege which has enabled me to do this. There are present others who from associations and other reasons are specially qualified to speak. I will now ask them to do so.

Dr. R. R. Stawell said:

At this special meeting of the Branch, held in memory of Sir George Syme's long and most notable service for us and for the medical profession throughout Australia, it is fitting that there should be some spoken expressions of the admiration and the great regard we had for the man himself.

To what has already been so well said and written about him it is now my privilege to add my tribute to the memory of the man who was for some of us a most valued friend, for many of us a most helpful colleague, and who was for all of us an honoured leader.

We gave him the position of leadership because years ago we had come to have confidence in his intellectual power and knowledge and because we had unwavering confidence in the singular uprightness and honest mindedness of his character.

I often used to think that Sir George Syme was by temperament the very reverse of the ambitious-minded leader of men. He valued leadership, of course, but popularity made no appeal to him. We forced upon him high positions with their great responsibility and because he was strong in body and mind and unselfish, he accepted these positions, with all this extra work and filled them worthily and with distinction.

Some of you who had known Sir George Syme only as a chairman at meetings or as president at conferences on serious matters, may not have realized that he had other interests. He was a many-sided man and in the less serious matters of life he was always an interesting and delightful companion.

I do not desire today to speak of my personal friendship with Syme, although I am thankful to realize that the ties of that friendship strengthened as the years progressed, but I do desire to tell you something which you have a right to know, to tell you something of the circumstances and some of the essential facts of his final illness. I particularly desire to speak about these things because I want you to know that even when the shadow of death was upon him, Syme showed forth very clearly and very quickly, of course, some of those fine qualities which we had admired and revered in him during his active life; they were real parts of his personality.

A few days before he was taken ill, I was associated with Sir George Syme in a matter of difficulty and responsibility. We were called upon to inquire into a complaint concerning the medical service at the Melbourne Hospital. During that inquiry I was impressed anew by his intellectual alertness, his incisiveness and his judicial minded-

ness; at the end of the inquiry his address was a masterpiece of wisdom and human understanding. As we were leaving the hospital I told him that he had handled a difficult situation very well. He did not reply; he was always inclined to be unresponsive, so that at times he appeared to be somewhat inscrutable. A few minutes later he said: "I feel the strain of these things now. I think I am trying to do too much."

On the actual morning of the day he was struck down I and others had a three-hours' conference with him on difficult medical cases; again I thought I had never seen him show a better grip of a multiplicity of details or show better judgement.

That afternoon, although he had important responsibilities to face in the evening, he felt it was his duty to attend the Chancellor's reception at the University and then at the end of a long day, while he was dressing for the University commencement dinner, at which he had promised to preside and give an important address, he suddenly got a severe pain in his forehead.

A lesser man would have given in at once, but with quiet courage, Syme determined to carry on; he went to the dinner. Dr. Latham, the retiring President of the University Association, was shocked to see him looking very ill and obviously in great pain. Though urged to go home, he said: "No, I will go through with it, if possible." It was soon apparent that he was physically incapable of holding up his head and he decided to leave.

On his way home and at his house, even when his need was sorest, he made no complaint; he exercised wonderful self-control, his one idea even then seemed to be a kind consideration for others, for his family and for us all.

When I arrived he said: "I am sorry you have had the trouble of coming out." Later on in the evening he had a sudden severe cerebral seizure, became deeply unconscious with rigidity of all the limbs and with stertorous, irregular breathing. His blood pressure was very high. It was clear he had an intrameningeal or even an intraventricular hæmorrhage. After some hours there was a return of consciousness; he recognized his family, he spoke a little and in answer to simple questions said he had a definite boring kind of frontal headache. On lumbar puncture the cerebral-spinal fluid was found to be massively admixed with blood. He became unconscious again and within a few days he died.

Now in this time of sorrow at our great loss there should be some feeling of thankfulness that Sir George Syme did not have to bear the burden of bodily weakness and did not suffer the tragedy of mental failure. He died in the plenitude of his powers. Since his return from England a few months ago he seemed to be exceptionally well and I felt even during that last week of his active life that his intellect and influence were still on the very highest levels of helpfulness. So that I can say of him, what was written of another: "Life would inexorably have led him down the slopes, death stayed him at the summit."

And now let me say in conclusion that the finest thing in Sir George Syme's life was his fine character, its influence was like a purifying fire in our midst. Let us, therefore, who knew him and worked with him and who were the better for his presence, determine by word and deed to keep that influence alive and to hand it on to others, so that it shall endure in this community as a steady and helpful force for good.

Sir Henry Newland said:

The whole earth is the sepulchre of famous men and the grief and regrets due to their death know not certified boundaries. I have the honour on this occasion when we are met together in proud and loving memory of Sir George Syme, to speak for South Australia and to say that South Australia shares the grief of her sister State Victoria and mingles her tears with hers. The President of the South Australian Branch of the British Medical Association, Dr. John Corbin, has entrusted me with this letter to read to you. He is addressing me.

Dear Newland: As you have agreed to represent this Branch at the memorial meeting for the late Sir George Syme, I should be glad if you will convey the sympathy

of the South Australian Branch to the relatives and the Victorian Branch.

The work of Sir George Syme from the surgical and administrative points of view will ever remain as an ideal for all medical men in Australia to aim at.

The loss sustained by the profession and the whole community is enormous.

We as a Branch deplore the passing of one who has been such an outstanding figure in the medical world of Australia.

Yours faithfully,

(Signed) JOHN CORBIN, M.R.C.S., L.R.C.P.,

President, South Australian Branch.

Not only has the record of his fine achievements limned his distinguished personality for us, but they of our profession in the United Kingdom and the United States recognize and honour it too.

Ladies and gentlemen, I am largely inspired in what I am going to say by those words of Francis Bacon which are a golden rule for observance by every member of our profession in these selfish and mercenary days. "I hold every man a debtor to his profession, from the which as men of cause do such to secure countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament there unto."

Quite early in his life reflection can hardly have failed to remind Sir George Syme that the name he bore held a high and honoured place in the history of his native State and his justifiable pride thereat must have stimulated him to uphold the family traditions. And later on when he embarked on the study of surgery the great name of Syme of Edinburgh and the immeasurably greater name of Lister which was linked by family ties with that of Syme and the great achievements associated with these names, formed another example (of which no doubt he was cognizant) for a young man on the threshold of a surgical career. In striving throughout his life to conform to the example set by these men and other great leaders of our profession, Sir George Syme discharged in fullest measure the debt to his profession to fit himself for the practice of surgery, the specialty of his choice. He qualified as a Fellow of the Royal College of Surgeons of England at a time when it was an uncommon thing for an Australian graduate to do. He did not lightly undertake the practice of his art. With Moynihan he believed that: "Surgery is not only a craft, though craftsmanship of a high order is essential. It is a profession for which a man should feel not only a complete devotion, but also a sense of special dedication. Its practice requires the most flawless integrity in thought and act." Further, Sir George recognized and acted upon the truth of the following passage: "The men who have achieved success are those who have worked, read and thought more than was absolutely necessary, who have not been content with knowledge sufficient for the present need, but have sought additional knowledge and stored it away for the emergency reserve. It is superfluous labour that equips a man for everything that counts most in life."

Sir George Syme's mental equipment, his qualities of mind and heart and an accumulating experience enabled him to carry out with credit to himself and the greatest possible advantage to his patients the position of surgeon in one degree or another to the Melbourne Hospital. And so, ladies and gentlemen, in the most honourable Baconian sense, Syme became an ornament to his profession. But the practice of the true science and art of surgery was but a part of Sir George Syme's professional life. Service to his fellow professional men as the years rolled on, occupied an increasing amount of his time and latterly occupied it almost entirely. He was one of the original members of the Federal Committee. His clarity of thought and logical reasoning and the persistence with which he advocated what he believed to be the right course to follow in many difficult situations, made him a very valuable representative of this State. When the late Dr. W. T. Hayward retired from the chairmanship, Sir George Syme in the view of the Committee was his natural successor. To the duties of the chair he brought the sterling qualities on

which the respect for him was founded. He was modest, he was dignified and his wisdom was a very real prop and stay to his colleagues. In the Federal Committee his last great construction work was to preside over the Committee in their consideration of the constitution of the Federal Council which endowed with wider powers is to replace the Federal Committee. His experience of the Federal Committee from its inception had convinced him that the change was desirable and greatly in the interests of the British Medical Association in Australia.

Of Syme's part in the formation of the College of Surgeons of Australasia I shall say but little, as another speaker will deal with it. I say no less than the truth, that had it not been for the strength of Syme's authority and the respect in which he was held, the College could never have been founded. Physically small of stature, within that little body dwelt the indomitable soul of a giant and the difficulties which confronted the founders, Syme grappled with and largely overcame before his death. And so in the words of Bacon, Syme was a help and an ornament unto his profession.

Fame it is said is not the popularity, the shout of the multitude; it is the spirit of a man surviving himself in the minds and thoughts of other men, undying and imperishable. The business of life is to go forward and surely Syme's spirit, if we value his example, ought to survive in us, his friends. "Men have their time and die many times in desire of some things which they principally take to heart; the bestowing of a child, the finishing of a work or the like. If a man have a true friend, he may rest almost secure that the care of those things will continue after him; so that man hath as it were two lives in his desires."

Syme was in a very real sense a pioneer, in a sense lived an anticipatory life. It is we, his friends, who must do what Death has decreed he cannot do himself. Let him sleep on, resting secure that we too shall cancel the debt to our profession.

Dr. Gregory Sprott said:

The inability of Dr. George Clemons, our President, to be with you has afforded me the privilege of attending and conveying to this meeting the sincere sympathy of the Tasmanian Branch in the great loss the profession has sustained in the death of the late Sir George Syme.

The members of our Branch recognize that, though Sir George Syme was a resident of Victoria and a member of the Victorian Branch, his work and influence were not confined to his own State, but were extended beyond even the limits of the Commonwealth of Australia.

No one of our members who were students at the Melbourne University and the Hospital, can ever forget his great helpfulness to them, his thorough methods and his kindly consideration for the feelings and welfare of his patients. Others of us who met him later in life, could not fail to be impressed with his great ability, profound knowledge and sound judgement, yet withal he was one of the simplest and most modest of men.

Indeed it can be truthfully said his was the goodness and the wisdom which Plato regarded as the most perfect possession and which in the words of a great poem is "glorious and fadeth not away."

Though in time his name may be forgotten, we feel his work at the University and the hospitals, as President of the Medical Congress, Federal Committee and first President of the College of Surgeons of Australasia, Chairman of the Federal Health Commission will be an enduring testimony of the great and unselfish service he rendered to the profession and the community.

Here I would like to express my personal appreciation of the good work he did on the Federal Committee. I do not hesitate to say that in all his activities, nowhere will he be more missed than at the Federal Committee meetings. As you know he was Chairman for many years and whatever good that body may have done, it was largely due to the efforts of its late Chairman. His knowledge of the needs of the profession, the influence he wielded in medico-politics, his judicial mind and his whole-hearted love for the good of his professional brethren made him the ideal Chairman he was. It will, I fear, be a very

difficult matter, almost impossible, to get another with the knowledge and the time to give which Sir George Syme gave so readily to fill the position. But Sir George held so many positions and carried them out so well, that it is difficult to say what his greatest achievement was.

Of him it may be said in very truth: *Eægi monumentum ære perennius.*

Those of us who enjoyed his friendship, have had many pleasant experiences of his hospitality and kindness and we mourn with you at the passing of such a great and good man. To Lady Syme and his children and to you his *confrères* we offer our deep sympathy.

Dr. A. L. Kenny said:

A man severe he was, and stern to view,  
I knew him well,  
Yet he was kind, or if severe in aught,  
The love he bore to learning was at fault;  
... and still the wonder grew  
That one small head could carry all he knew.

Of Scottish ancestry, born in Nottingham in England, Sir George Syme presented a blending of the characteristics of the Scotsman and the Englishman and of a Quaker mother. So one noted his taciturnity, reticence, his capacity to listen and observe whilst reasoning acutely, his impassivity. Not easily aroused, when he was aroused, he was vehement, severe, incisive, definite, short. Instinctively and by his very nature moral, fair and just, he was intolerant of subterfuge, equivocation or deceit. His severest and very rare indictment of a man was that he was not straightforward and trustworthy. These qualities, with his prolonged silence and his answers, short, accurate and to the point, produced a natural brusqueness which on those unacquainted with him left an impression of want of sympathy. Nothing could be farther from the truth; he could be kindness and tenderness personified with his patients and there was no fonder, more loving or kinder husband and father in the Commonwealth. To come upon him, unawares, on all fours on the hearth rug, his young children riding on his back with shrieks of joyous laughter was to find the real soul and spirit of George Syme.

Quite in his early days as a surgeon he read a paper on altruism in the literary society of the Australian Church which was published in *The Age*. For the many decades of years which followed, he never in the slightest degree deviated from the noble standard he there drew up. He worked with a love of work for work's sake and with a sense of duty which governed and controlled all of his actions. Whilst unsparing in his efforts and grudging no strain of mind or body to attain the best result from every endeavour, it was the principle of the action that held paramount place with him. George Syme's gospel was that as a unit in the community, as a member of the profession of medicine he owed a bounden duty to the community and to the profession to give to each his fullest and best endeavours. He made it his business to study the life of the community, its needs, the methods of their attainment, its abuse and the remedies. In his profession from his student days he gave himself "up to unremitting, assiduous, close study; he informed himself to the utmost of his capacity in every branch of medical and surgical art and kept pace with all that was new. Hence his marvellous accuracy in diagnosis. With wide and deep knowledge, with highly cultivated powers of observation and innate shrewdness, with the capacity for taking infinite pains in clinical and scientific examination, with an unimpassioned judicial mind and with a large, matured, well reasoned and sound judgement, his diagnoses often amazed his compeers by their unexpectedness and as afterwards proven at operation or autopsy by their accuracy. There are those in this hall upon whom such manifestation has been given. In intimate conversation he has recorded that most of his diagnoses were obtained by elimination, after the closest and most intense application of what knowledge he had been able to bring to bear upon a case.

In the council chambers of the profession, by common consent the chief place was his. His wide knowledge of

men and affairs, his long experience in the profession, his calm wisdom, his capacity for patiently hearing all sides of a question, his absolute fairness, his strict sense of right and his fearlessness in expressing his opinion, made him preeminently a trusted, honoured leader. The honour of the profession was to him a thing as sacred as his life: he guarded it jealously with every weapon in his possession. He was proud to belong to that profession and was intolerant of any action which might tend in the least degree to blemish it. Hence his bold, uncompromising speeches to members of the profession on two or three occasions in recent years as to the commercial tendencies of a few.

That such carefully thought out and perfectly justified criticisms were badly received by some was a source of pain to him, but he was not deterred. He spoke, as always with conviction, with fairness and with a pressing sense of duty. Joyously self-sacrificing in his efforts to promote the welfare of his profession, he became resentful as the years rolled on at the numerous evidences of disinclination to make sacrifices to promote that welfare, increasingly apparent amongst his fellow members. In Australia practically all who enter the medical profession, are dependent upon the emoluments of their professional work for their maintenance and quite naturally there may be a tendency to regard this as the aim and object of medical work. Despite cynics, medical men, as other men, must live. It is just here that the medical man must sense the need for action to be directed by principle rather than by results. The medical man must realize that by his admission to the ranks of the profession he instantly becomes the inheritor of a great and noble tradition passed down to him, one may say, from the twilight of fable. A tradition based upon the fact that in his hands and those of his kind are placed the bodies of his fellow man, that at their entrance to life, throughout their lives and at their deaths he is their constant, trusted, unfailing minister. To the medical man in a manner and a degree differing from every other learned profession, must practically every man and woman come at some period of their lives. Numbers never see or hear of a minister of religion; more never come in contact with a lawyer. The medical man is absolutely trusted with the most sacred confidences of his patients and comes into the most intimate personal relations with them. He shares in their joys and in their sorrows; he is trusted and respected by them. To the idealist (the medical man without ideals should not exist) there is the greatest joy in this bestowal of implicit trust and confidence, there comes an uncontrollable stimulus to put forth the utmost and the best of one's capacity in return therefor and it becomes his abiding effort to pass on to his successor untarnished, nay polished, the tradition he had learned to love and cherish. Can anything commercial give such a soul-satisfying reward? Is any sacrifice of time or comfort too great to give to the welfare and development of a profession of so great nobility? With such a man as George Syme were not these things the mainsprings of his unremitting, unselfish, self-sacrifice to the promotion of the ideals of the medical profession and of medical professional life?

Robert Louis Stevenson's appreciation of the position of the medical man in the community may well be quoted here:

There are men and classes of men that stand above the common herd; the soldier, sailor and the shepherd not unfrequently, the artist rarely; rarer still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity, he had, such as is possible to those who practise an art, never to those who drive a trade; discretion tested by a hundred secrets: tact tried in a thousand embarrassments; and, what is more important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sick room and often enough, though not so often as he wishes, brings healing.

George Syme loved and enjoyed every side of life and found time for cultured enjoyment outside of his strenuous

surgical and professional work. At the Beefsteak Club he gave of his best in literary composition and in discussions of papers by others. For years he was the mainstay of the Repertory Club and no one enjoyed the plays produced more than he. He allowed nothing to interfere with his Wallaby Club walks and the ablest and brightest intellects in Melbourne could pour out testimony of his intellectual value on those occasions. On his railway journeys it was hard to detach him from his inevitable detective story, which he read with an avidity that would have made any youth of fifteen jealous. On his last railway journey the return from the annual meeting of the College of Surgeons of Australasia, held in Sydney last March, he was disgusted to find that the detective story with a flaming cover for which he had paid one shilling at the railway stall at Sydney Central Station was made up of medical and chemical incidents all of which were wrong, but he finished the book!

George Syme did nothing, could do nothing, by halves; as he worked, so did he play. Others have spoken of his work as Secretary to the Sanitary Commission with his lifelong friend, Harry Brookes Allen (as he then was) as Chairman, of his highly distinguished work as Chairman of the National Health Commission for the Commonwealth, of his demonstratorship and examinership in anatomy at the University of Melbourne, of his honorary surgeoncies at the Melbourne and St. Vincent's Hospitals, of the work he loved so much and did to the end at the Police Hospital, of his work and acute suffering in the Great War, of his arduous toil of late years in the Repatriation Department, of his Chairmanship of the Federal Committee of the Australian Branches of the British Medical Association, of his Chairmanship of the Melbourne Hospital Committee.

In August, 1920, at the Eleventh Australasian Medical Congress in Brisbane, Sir Louis Barnett, of Dunedin, proposed that action should be taken to obtain a higher grade of efficiency in surgical work and to provide for the bestowal of some hall mark on the efficient. The Congress decided to recommend that surgical subsections of the Branch of the British Medical Association should be formed in each State and in the Dominion of New Zealand. This was the germ of the College of Surgeons of Australasia which includes New Zealand. Conversations ensued between leading surgeons in the various States and the Dominion and Sir George Syme took advantage of the necessity for visiting several capital cities in Australia as Chairman of the Commonwealth National Health Commission to confer with senior and retired surgeons in those cities. It became evident that there was a great need to procure some control over and to exercise some discipline in the practice of surgery in the best interest of the profession and of the public, to endeavour to insure that those who had attained the necessary technical skill and possessed the essential judgement to perform the graver operations of surgery and who were characterized by the highest ethical and moral behaviour, should be certified to in such a manner as to be known to those sufferers who might be in need of such service. Just at the stage of his career when his years of assiduous, devoted and unsparing toil were beginning to show their effects upon his vigour and his reserve of health and strength and when his medical advisers had induced him to see the wisdom of early retirement from his professional work, he threw the whole of his powers, mental and physical, into the creation, the foundation and the development of the College of Surgeons of Australasia. Morning, noon and night, at home and in the city, it became the most absorbing interest of his life. He brought to bear in its interests the whole of his intellectual capacity, his wisdom, his judgement, his prudence, his foresight. His wife and daughters tell of how he constantly spoke and thought of it at table and in every aspect of home life. It is true to say that without him, it would have been impossible for it to have sprung so quickly into being, because no surgeon in Australasia possessed the absolute unwavering confidence of the medical profession and especially the surgical portion thereof in the manner that he did. That it has completed its first two years of existence with a fellowship of three hundred and thirty, with a smooth running organization, with a journal of first class quality in matter and form, is but a testimony to the magnificent

Club he  
missions  
of the  
duced  
th his  
ellects  
actual  
it was  
story,  
e any  
y the  
geons  
s dis-  
cover  
stall  
ished

ives;  
f his  
a) as  
man  
alth,  
y at  
acies  
work  
Hos-  
r, of  
part-  
e of  
ion,  
tee.  
ical  
pro-  
rade  
the  
ress  
the  
med  
his  
asia  
ed the  
the  
as  
m-  
in  
eat  
est  
re  
ill  
he  
ed  
oe  
se  
at  
ad  
ts  
h  
e  
r,  
e  
f  
n  
t  
s  
e  
e  
e

work, the great energy and the sanity with which he carried out his duties as President. By none will his loss be more acutely felt than by the Fellows of the College of Surgeons of Australasia. When he received the Honorary Fellowship of the American College of Surgeons at its Convocation in Boston, October 8, 1928, at the invitation of the American College he delivered an address and took for his subject: "The College of Surgeons of Australasia and its relation to the College of Surgeons of England, Edinburgh, Ireland and America." He emphasized the voluntary nature of the Australasian College and its requirement that on and after February 5, 1932, candidates for fellowship must possess a senior surgical degree or diploma, that is, Master of Surgery of the British or Australasian University or fellowship of a British College of Surgeons, thus insuring a high standard of theoretical knowledge. More than this is required because some of the most learned of the Fellows of the Royal College of Surgeons of England have been known to declare their incapacity actually to operate and it must be self-evident to a considerable proportion of men legally qualified to practise surgery that they are devoid of the necessary technical operative instinct. The College of Surgeons of Australasia cannot prevent any practitioner undertaking any operation he may think fit. Sir George Syme's life-long work in and for the British Medical Association and his years of Presidency of the Federal Committee of the Australian Branches of the British Medical Association, together with the list of founders and the reports of all the meetings from the inception of the College, give overwhelming proof, if proof were needed, of the determination of the Fellows of the College to work with and stand beside the British Medical Association. Its Fellows are required by the by-laws to be eligible for membership of their local Branch of that Association. At the Boston meeting Sir George Syme put forward a strong plea for a federation of all the colleges of surgeons to conduce to greater uniformity and greater progress.

In July, 1929, at the annual meeting of the British Medical Association held in Cardiff, the University of Wales conferred upon him the honorary LL.D. degree in justification of which his presenter read to the University a very long list of the activities of his surgical career.

On Friday, April 19, 1929, George Syme died, his earthly career ended. Was that the end of all with him? The answer from the few will be in the affirmative, from the many in the negative. It is not an easy conception to think that a strenuous, fruitful, well-lived life should slowly or abruptly make an end of such a career. Affection alone, if no other motive, would will that there should be another existence for which this would be the preparation and that those who loved a man as George Syme's intimate friends loved him, might cherish the hope of a longer and fuller and sweeter untrammelled friendship. Affection and admiration and appreciation would desire that there should be an enduring reward for a life so well spent. But, granting for the moment the affirmation of the few, was such a life without result, without effect?

George Syme lived for and up to his ideals. He derived his happiness therefrom, but his unwavering and unflinching pursuit of those ideals did not prevent his material success in his professional work. Can that life and those results be contemplated without a lesson being drawn therefrom? Surely his life is a stimulus to his colleagues, to those of his earlier and later years, to those who have entered and are just entering the medical profession. His highest conception was duty, duty thoroughly and completely carried out if possible, at least thoroughly and completely attempted. He sought no prominence, no preferment, no honours, for a long time he determined to refuse the knighthood the medical profession asked the King to confer upon him. He was sought, he was given responsibilities, he was trusted, he was honoured. He was

"A man of such perfection as we do in our quality much want."

[Two Gentlemen of Verona, IV, 1.]

*Pace, George Syme, atque vale!*  
May the earth rest lightly on him!  
May he rest in peace!  
He honoured his profession;  
His fellows honour him!

The following motion was carried, all present signifying their concurrence by standing.

The Victorian Branch of the British Medical Association records its great sorrow in the loss it has sustained by the death of Sir George Adlington Syme. Not only is there a deep sense of personal loss felt by us all, but there is grateful recognition of the profound and enduring service which he so unselfishly rendered to the whole medical profession of Australasia throughout his long medical career.

As Vice-President of the British Medical Association, President of the Victorian Branch on several occasions, Member of the Representative Body, Chairman of the Federal Committee, President of Congress and Member of the Branch Council, he rendered a service of such value as must ever receive the most grateful recognition from, and profound admiration of, the whole profession, and we desire to convey this, along with our sincerest sympathy, to Lady Syme and her family.

The Last Post was then sounded.

JOHN FRANCIS WALTON.

WE regret to announce the death of Dr. John Francis Walton which occurred at Summer Hill, New South Wales, on May 10, 1929.

## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Darling Building, University of Adelaide, on November 29, 1928.

### The Injection Treatment of Varicose Veins.

DR. LEONARD LINDON showed two patients illustrating the use of injections of quinine and urethane in the treatment of varicose veins. The patients were both females undergoing treatment at the Adelaide Hospital; both had large indolent ulcers of the leg as a complication of the varicose veins, the duration of the ulceration being nine and eight years respectively. In each instance the varicosities of the internal saphenous vein below the knee had been occluded by five injections of the quinine-urethane solution. At the same time the ulceration had been treated by the application of Unna's paste stockings twice a week. In each instance the ulcers had healed by a firm, strong scar within nine weeks. Dr. Lindon pointed out that the injection treatment was simply an artificial method of obtaining the result which followed natural thrombosis of varicose veins. Patients who manifested Trendelenburg's sign were the type most suitable for any form of thrombotic treatment. He emphasized the precautions necessary and the contraindications. He had had very good results in using the same solution in the injection of hemorrhoids.

### Foreign Bodies in the Bowel.

DR. A. R. SOUTHWOOD reported the case of a working girl of eighteen years who had complained of abdominal pain and who had volunteered the history that during the previous week or so she had chewed and swallowed a number of pins. There had been slight tenderness and resistance in the right iliac region. A radiogram had revealed sixteen ordinary pins, all of them twisted and bent, in the ileum and caecum. The patient had been admitted to the ward and given agar agar. An enema had produced a large result and all the pins had been recovered. An X ray examination a week later had revealed no pins. The patient had suffered no subsequent ill effects.

### General Paralysis of the Insane.

Dr. Southwood also showed a congenitally syphilitic boy of fifteen years suffering from incipient general paralysis. The detailed history of this patient will be reported in a subsequent issue.

### Arthrodesis of the Shoulder Joint.

DR. G. H. BURNELL showed a boy on whom he had performed an arthrodesis of the shoulder joint. The patient, *atatis* eight years, had had an attack of acute poliomyelitis at the age of eighteen months. He had first come to the Children's Hospital three months after the onset, when it was found that there was complete atrophy of the left deltoid and of the muscles of the left upper arm. Although the patient had been under continuous observation for the next seven years, the state of his arm had remained the same as when first seen. He had had a "flail" shoulder and owing to the laxity of the capsular ligament the joint had been easily dislocated. The muscles moving the scapula had been in good condition and he could shrug his shoulders well, so that he had been judged to be suitable for the arthrodesis. This had been performed on August 12, 1928. The joint had been opened by a vertical incision through the wasted deltoid muscle, the articular cartilage being removed as completely as possible, after division of the long head of the biceps close to its origin. The coracoid and acromion processes of the scapula had then been fractured at their bases and crushed down on to the denuded head of the humerus. No further method of fixation of the joint had been used beyond putting it up in an abduction splint in a horizontal position with the arm pointing forwards at an angle of 30°.

The splint had been finally removed on December 10, 1928, when it was found that there was firm union of the joint surfaces. The patient could hold the upper arm in a horizontal position and could place his hand on the top of his head, while it was also noticeable that the trapezius muscle on that side had already begun to hypertrophy.

### Pregnancy and Fibromyomata.

DR. J. B. DAWSON showed two specimens from patients with pregnancy complicated by fibromyomata.

The first specimen had been removed from a married woman, aged thirty-six, who had had four children. It consisted of a fibromyomatous uterus containing a fourteen week's pregnancy. This patient had been married eight years. During her first pregnancy seven years previously she had had myomectomy performed for fibromyomata. This pregnancy had not been interrupted by the operation and had proceeded to term. Since this she had had two uneventful pregnancies and confinements.

She had first been seen on August 15, 1928, when fourteen weeks pregnant. She had complained of some lower abdominal pain and tenderness of the enlarged uterus which she could readily feel herself. On examination it had been apparent that the pregnant uterus was studded with fibromyomata; it had been tender to the touch and had caused some pain.

The clinical problem had resolved itself into three questions. The first was whether the pregnancy should be terminated. This had been decided in the affirmative on the following grounds. Dr. Dawson had had experience of two similar cases seen during his house surgeoncies. One of these had ended in a ruptured uterus at the seventh month with recovery after a stormy illness and the other in parturition at term followed by a fatal *post partum* hæmorrhage. Further, the social factor that the patient lived on a station ninety miles from medical aid was important. The second question was whether myomectomy should be done during the pregnancy or subsequently, and the third whether hysterectomy should be done during the pregnancy or subsequently.

Dr. Dawson said that as he had already given his reasons why the pregnancy should be terminated, the question remaining was a choice between myomectomy and hysterectomy. The patient was a very intelligent woman, was a certificated nurse and therefore was able to enter into a discussion with understanding. She had

thought that as she was prone to grow fibromyomata, she would rather have the nidus of the tumours removed. The uterus had therefore been removed with its contained pregnancy. The operation and convalescence had been without untoward incident and the patient had been able to return to her remote home at the end of six weeks.

The specimen was of interest as it showed not only the numerous interstitial fibromyomata, but also the very general replacement of muscle fibres by fibrous tissue, a phenomenon which explained the liability of such a uterus to rupture under the stress of a growing fœtus or to fail in its control of post-parturient bleeding.

Dr. Dawson expressed his appreciation of the interest taken by Professor Woollard in the patient and of the careful mounting and preparation of the specimen by his department.

The second specimen had been removed from a *primigravida*, aged thirty-two, who had been admitted to the Adelaide Hospital under Dr. Ray's care on October 18, 1928. Upon admission she had been twenty-five weeks pregnant, had had pronounced œdema of the lower limbs reaching to the groins, had been vomiting frequently, had been passing a very scanty, highly albuminous, blood-containing urine and had been having attacks of severe epigastric pain. The pain had been so severe that it had been considered probable that the patient was having attacks of gall stone colic. At the subsequent operation, however, the gall bladder and ducts had been examined and found to be free from calculi. During the seven days that she was in the medical ward she had become worse in spite of thorough dietetic and eliminative treatment. Her vomiting had continued, the œdema had become more massive, she had become deeply jaundiced, bile had appeared in the urine, she had had a retinal hæmorrhage and some mental confusion had developed. It had become increasingly clear that the profound state of toxæmia associated with serious signs of hepatic destruction demanded a termination of the pregnancy.

She had been transferred to the gynaecological ward on October 25 with the clinical picture outlined above. Her systolic blood pressure on admittance had been 200 millimetres of mercury and the diastolic pressure 110 millimetres. It had been decided to empty the uterus by Cæsarean section, partly because speed was indicated and also because Dr. Dawson believed that this was a safer method of emptying the uterus at this stage of pregnancy than any vaginal procedure.

Prior to operation abdominal and vaginal examination had been difficult because of the œdema of the abdominal wall, but it had been clear that there was some complicating pelvic condition, the exact nature of which could not be determined.

Upon opening the abdominal cavity the pregnant uterus had been found to be grossly fibromyomatous, one pedunculated mass growing from the back of the lower segment being tightly impacted in the pelvis. The uterus had been quickly and successfully emptied through the classical uterine incision and the opening sutured in layers. The question had then arisen whether Dr. Dawson should rest content with what he had done or whether he should do a myomectomy or hysterectomy.

The patient's condition had been good, she had no children and myomectomy seemed the appropriate procedure. This would have been done at a later date, as it was often a much more formidable operation than a hysterectomy. Careful examination of the surface of the uterus and also of the cut musculature had revealed that the organ was studded by very numerous and minute fibromyomata which would certainly have resulted in recurring crops of neoplasms of such a size as to produce further trouble. It had therefore been decided to remove the body of the uterus which had now contracted to a manageable size. This had been done and the patient had returned to bed in a moderately good, but slightly shocked condition. She had made a good recovery, the signs of toxæmia had rapidly diminished and although she was still in hospital she was thoroughly convalescent, entirely free from symptoms and showed no abnormal signs except a very faint trace of albumin in a urine that was otherwise normal in quality and quantity.

Dr. Dawson said that it was interesting to note that had this pregnancy continued to term, Caesarean section would have been the only possible method of delivery, owing to the impaction of a large fibroid in the pelvis.

A MEETING OF THE EYE AND EAR SECTION OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Eye and Ear Hospital on February 26, 1929, Dr. E. L. GAULT, the President, in the chair.

#### Eye Injuries and Compensation.

DR. MARK GARDNER read a paper on eye injuries and the *Workers' Compensation Act*. He said that the *Workers' Compensation Acts* of 1915 and 1922 provided for compensation to workers for injuries occurring in the course of their employment. The act applied to workers employed by or under the Crown or any Government department as well as private employers. If in any employment personal injury by accident arising out of and in the course of the employment was caused to a worker, his employer was liable to pay compensation. He was not liable for injuries causing disablement of under a week. Compensation was disallowed if the injury was attributable to serious or wilful misconduct. Unless injury resulted in death or serious and permanent disablement, payment in default of agreement was in the discretion of the judge of county courts or police magistrates, either a lump sum or weekly payment being made during incapacity. When a lump sum was awarded instead of weekly payments, it had to be a sum equal to the present value at 5% compound interest of the aggregate weekly payments which would probably have become payable to the worker during the period of incapacity. The amount of compensation was calculated with reference to the earnings of the worker. Insurance was compulsory with an approved insurer.

If death resulted from the injury and dependants were left, the amount paid equalled the earnings for the preceding three years or £200, whichever of these sums was larger, but the total was not to exceed £600. If the deceased had not been in employment for three years preceding the accident, the amount paid was 156 times the average weekly earnings. When total incapacity resulted, a weekly payment was made during the incapacity equal to 66-66% of the average weekly earnings during the previous twelve months or for any period the worker had been in employment with the same employer. For partial incapacity a weekly payment was made, equal to 66-66% of the difference between average weekly earnings as above and the average weekly earnings he was able to earn after the accident. Such weekly payment in either total or partial incapacity was not to exceed £2 and the total liability was not to exceed £600. Special provisions were made for workers under twenty-one years of age. When there was some permanent defect left as a result of the accident the fourth schedule of the act allowed for compensation in ratios to full compensation for total incapacity.

The injuries quoted which interested those present were: Loss of both eyes, 100% of full compensation for total incapacity; loss of an only eye, 100% of full compensation for total incapacity; total loss of sight of one eye, 30% of full compensation for total incapacity; total loss of sight of one eye together with serious diminution of sight of the other, 75% of full compensation for total incapacity.

In the case of the loss of both eyes or of an only eye any compensation previously obtained under the act in respect of the total loss of sight of one eye had to be deducted from the compensation payable. Under the act a worker whose vision might be seriously impaired permanently, therefore, did not receive compensation apart from that due during his total or partial disablement after the injury. Dr. Gardner thought that the act should be amended and that a method of measurement of defect should be adopted. A worker left with a considerable amount of central corneal opacity or with a subluxation of the lens or with aphakia *et cetera*, should be entitled

to some compensation for the permanent damage to the most important organ of his body; even if the worker performed only unskilled labour and his visual defect did not actually impair his earning capacity, surely the comfort and enjoyment of his leisure hours should be considered.

The loss of the little finger of the hand entitled a worker to 12% of full compensation, deafness of one ear to 10%, loss of a toe to 5%, of the forefinger of the right hand to 20%, of left hand to 15%. The difficulty was to assign percentage values to varying degrees of partial loss of vision. Dr. Gardner asked whether they were to concern themselves only with visual acuity determined by Snellen tests. Could they rightly disregard the field of vision or the presence or absence of binocular vision? Both of these functions were of great importance in estimating the future working capacity. New York was the only State in America in which notice was taken in the compensation laws of these two latter functions. There the law specified that the loss of binocular single vision or 80% of vision of one eye was equivalent to the loss of an eye and subject to the same compensation benefits.

Tables in different States in America had been developed by ophthalmologists and ophthalmological societies to attempt to give accurate estimates of the amount of visual acuity or central vision lost when tested by the Snellen chart. These tables varied considerably. The tables of the American Medical Association were the only ones that were concerned with any function other than visual acuity. The principle of the tables was to allow so much percentage for loss of foot distance. Thus in Dr. Chapman's table, used in Montana, Oklahoma and Utah, visual capacity  $\frac{20}{40}$  ( $\frac{1}{2}$ ) was equivalent to 5-0% loss of vision,  $\frac{20}{60}$  ( $\frac{1}{3}$ ) to 10-0% loss of vision,  $\frac{20}{80}$  to 15%,  $\frac{20}{100}$  ( $\frac{1}{5}$ ) to 20%,  $\frac{20}{120}$  ( $\frac{1}{6}$ ) to 30%,  $\frac{20}{140}$  to 35%,  $\frac{20}{160}$  to 40%,  $\frac{20}{180}$  ( $\frac{1}{9}$ ) to 50% and  $\frac{20}{200}$  ( $\frac{1}{10}$ ) to 90%.

The Chicago Ophthalmological Society's table gave slightly higher percentages. Other tables varied considerably. West Virginia had adopted a very complicated table based on tables used in Germany and other European countries. California gave consideration to the age and occupation of the worker. A very ingenious and intricate schedule had been worked out. The American Medical Association was the only one that attempted to evaluate for compensation purposes the three components of vision. The functions were assigned the following values:

Factor A: Industrial loss of central visual acuity for distance or for near, 50% compensation.

Factor B: Industrial loss of field of vision, 25% compensation.

Factor C: Industrial loss of binocular single vision, 25% compensation.

The percentages for loss of visual acuity were the same as Dr. Chapman's table, that was to say, the figures would be halved,  $\frac{1}{10}$  would be 10% *et cetera*. Estimation of Factor B was suggested by the following statement.

Contraction to 60°	equalled	2-00% compensation
Contraction to 55°	equalled	4-16% compensation
Contraction to 50°	equalled	6-25% compensation
Contraction to 45°	equalled	8-33% compensation
Contraction to 40°	equalled	10-40% compensation
Contraction to 35°	equalled	12-50% compensation
Contraction to 30°	equalled	14-58% compensation
Contraction to 25°	equalled	16-66% compensation
Contraction to 20°	equalled	18-75% compensation
Contraction to 15°	equalled	20-83% compensation
Contraction to 10°	equalled	22-91% compensation
Contraction to 5°	equalled	25-00% compensation

Freeland Fergus stated that the field vision was employed for almost all manual work and a person engaged in such a form of employment hardly ever used his macular vision; he, however, did not think that this field vision could be estimated and expressed by a formula. Fergus concluded that if men were tested for work by letters, a number would be rejected who were capable of doing a great deal. These views suggested that the American Medical Association's table which estimated only the visual acuity valuation as 50%, while all the other tables used only

visual acuity in their tables of percentage compensation, was the more satisfactory.

The Medical Society of New York had prepared a table which had not yet been adopted officially by the Industrial Board. The three main factors were computed in the proportion of  $\frac{2}{5}$  for central visual acuity,  $\frac{2}{5}$  for field vision and  $\frac{1}{5}$  for binocular single vision.

In twenty-four of the compensation acts in the United States provision was made for proportionate awards on account of partial loss of vision. In Ohio no award was made for less than 25% loss of vision. Dr. Gardner pointed out that in the Victorian *Workers' Compensation Act* the third schedule provided that if a worker after an injury was unable to earn as high a wage as before the injury, two thirds of the difference in wage had to be made up until the normal wage could be earned, the total sum not to be more than £600. In the New South Wales compensation act provision was made for compensation for partial loss of the sight, such percentage of the amount that would be payable for the total loss of the sight thereof as was equal to the percentage of the diminution of the sight; Western Australia had a similar provision in the schedule. The Commonwealth Government had introduced a bill in which compensation for loss of an eye was to be £350 and for partial loss of any part of the body such percentage of the amount payable for loss of part as was equal to the percentage of diminution of the use of such part.

In none of these three compensation acts was there any mention of any formula for determining such percentage loss of vision. In Dr. Gardner's opinion the Victorian act should be amended and a method of measuring percentage loss of vision should be adopted. He would favour a table on the lines of the American Medical Association in which visual acuity, field vision and binocular vision were all considered. He moved:

That a subcommittee of this Section be appointed to consider the possibility of having the act amended, to draw up a formula for estimating percentage loss of vision and to report to this Section at a later date.

DR. LEONARD MITCHELL seconded the motion which was carried. Dr. Gardner was asked to form a committee to deal with the matter.

DR. E. L. GAULT considered Dr. Gardner's suggestion a wise one. At a congress held in Melbourne some years previously an attempt had been made to define the term "totally blind," as it was used in ordinary insurance work. It had been agreed to suggest that an eye with a vision of  $\frac{1}{100}$  or less be regarded as totally blind. He did not know whether this definition had been accepted by any authority.

DR. ETHEL PARNELL stated that it was recognized by the Charities Board.

DR. F. J. B. MILLER said that he thought that a man should receive compensation for an eye which, though not necessarily blind at the time of examination, would of necessity become blind later as a result of the injury, such as detachment of the retina.

#### Senile Ectropion.

DR. E. L. GAULT described a new operation for senile ectropion and said that his remarks did not relate to those milder forms of ectropion which were relieved by slitting the lower canaliculus and insertion of Snellen's sutures, or even to those severer cases which were often effectively dealt with by some form of skin sliding operation and not, of course, to cases of cicatricial ectropion which called for transplantation of a skin flap.

The patient shown had been treated successfully by excision of a wedge-shaped piece of cartilage and conjunctiva and sliding outwards of the skin layer of the lid some years previously. He had returned recently with an aggravated form of ectropion of the lower lid, not benefited by tension on the lid, accompanied by much hypertrophy of the exposed conjunctiva and by deformity of the cartilage which interposed an obstacle to the restitution of the lid to its normal position. The curvature of

the cartilage had been reversed and the cartilage was drawn outward so that it underlay the exposed and hypertrophied conjunctiva.

Dr. Gault had decided to cut away the hypertrophied conjunctiva to complete the rotation of the cartilage and thus to use it still as part of the eyelid and secure the needed *point d'appui* to draw upward the skin into position. He had used cocaine infiltration anaesthesia. He had split the lower lid with a keratome into a layer nearest the eye comprising conjunctiva and cartilage and a layer remote from the eye comprising the skin of the lid. Next he had cut away from the cartilage with scissors and forceps the hypertrophied conjunctiva. He had then passed a doubly armed suture of catgut through the upper (then the anterior) margin of the cartilage in two places and had carried the threads deeply into the sulcus left by dissection of the skin flap and through the conjunctiva at the fornix where the threads were firmly knotted. The effect of this had been to bring the upper edge of the cartilage into the bottom of the wound, in fact to turn the cartilage upside down and inside out. The skin edge had then been united to the cut margin of the conjunctiva and a dry dressing applied. The deformity had been completely removed and had not recurred.

The skin conjunctiva sutures had been removed on the third day; the catgut sutures had not been removed and had become absorbed. The operation was applicable to conditions like that shown in which there had been produced a deformity of the cartilage preventing reposition. In these conditions the cartilage could be preserved with advantage and when reversed in the manner described, it formed an excellent support for the skin of the lid.

#### Opaque Nerve Fibres.

Dr. Gault also showed a condition of opaque nerve fibres. In the patch of opaque nerve fibres there had been little red streaks which suggested haemorrhages, but on subsequent examination had proved to be gaps in the medullated fibres showing the chorioid beyond.

#### Sympathetic Ophthalmia.

DR. J. F. SPRING showed a patient who was suffering from sympathetic ophthalmia and who had had no perforating injury in the exciting eye.

The patient was a female, aged eleven years. On August 7, 1928, she had been hit on the right eye with a stock whip and had immediately got severe pain and had come home holding the eye. On August 9 Dr. Spring had been called into the country to see her. After a very careful examination there had been no discoverable wound and no stain with fluorescein, no retinal reflex, the anterior chamber had apparently been packed with blood and no view of the iris had been obtained, projection had been good and tension normal. Atropine and hot fomentations had been ordered. On August 20, 1928, the blood had been undergoing absorption, the iris was visible, the lens was apparently opaque (this had proved to be lymph deposited on the anterior surface of the lens) and the cornea hazy. On October 30, 1928, the deep layers of cornea had been opaque, giving the appearance of the lens lying in the anterior chamber. On that date there had been for the first time circumcorneal injection and keratic precipitates. On November 10, 1928, the right eye had been much as before and the left eye had manifested kerotic precipitates and circumcorneal injection. Examination of the nose had revealed no abnormality, slight infection of tonsils had been present. The Wassermann test and the von Pirquet test had yielded no reaction, X ray examination of the nose had revealed no abnormality. There were three children in the family, all were well, there was no history of tuberculosis. The mother had had no miscarriages or still-births. Milk injections had been given and mercury and salicylate of soda.

The eye had improved for a while until December 10, 1928, when the left eye had flared up again and after consultation it had been decided to remove the right eye. In the right eye the lens had been intact, an exudate had been present in front of the lens and an opacity in the centre of the cornea, the vitreous had been clear and no

evidence of tuberculosis and no perforation had been found. Since the removal of the right eye, except for two small relapses, the left eye had slightly improved. There was still some iritis present, but the pupil was dilated and the eye was still slightly improving.

DR. M. GARDNER and DR. L. MITCHELL asked Dr. Spring if it were not possible that he had overlooked a small subconjunctival perforation or rupture of the sclera.

DR. A. H. JOYCE asked if keratic precipitates had been present in the right eye or whether endothelial cells had been seen in the chorioid under the microscope.

DR. M. GARDNER asked whether the projection of light had remained good in the right eye.

DR. J. RINGLAND ANDERSON said that there were cases reported in which an eye injured some time previously without perforation had given rise to sympathetic ophthalmia. He thought the essential factor was a sufficient disturbance of the ciliary body.

DR. SPRING replied that he did not think it was possible to have overlooked a perforation, as he made a very careful examination at the time. No mention had been made in the pathologist's report of the presence of large endothelial cells in the chorioid. The projection of light in the right eye had remained good until it began to become soft shortly before removal. It was suggested to Dr. Spring that the pathological specimen be sent to London or Vienna for further opinion and report.

#### Conical Cornea.

DR. J. RINGLAND ANDERSON showed a patient with a conical cornea which had been treated by a Zeiss contact glass. The vision had improved from  $\frac{1}{100}$  to  $\frac{1}{20}$ . The patient had been wearing the glass a month and was quite comfortable with it. So far it had not irritated the eye and she could remove it easily herself for cleaning purposes.

DR. E. L. GAULT expressed great interest in the case and said this form of treatment was far in advance of anything he had seen used in this trying condition and he congratulated Dr. Anderson on his present result and would look forward with interest to future reports of the result of the treatment.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

King, Stanley William Milton, M.R.C.S. (England), 1924, L.R.C.P. (London), 1924; Grantham, Macleay Street, Potts Point.

Coyle, William Thomas, M.B., 1928 (Univ. Sydney), 4, Holt Street, Double Bay.

Ross, Garnet Andrew, M.B., B.S., 1927 (Univ. Sydney), 168, Newland Street, Waverley.

#### Congress Notes.

##### AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

##### Vice-Presidents of Sections.

Dr. George Bell (Sydney) has accepted appointment as Vice-President of the Section of Surgery in the place of Dr. G. H. Abbott who has retired in view of his appointment as President of Congress.

Dr. B. B. Barrack (Brisbane) has accepted appointment as Vice-President of the Section of Dermatology.

##### Programme of Meetings of Sections.

Notice of papers and exhibits to be presented at the meetings of the sections must be received not less than sixty days before the inaugural meeting of Congress and

a complete typewritten copy of the papers must be in the hands of the honorary secretary of the section not less than thirty days before the inaugural meeting. Members who propose to read papers at the third session are therefore required to give notice either to the joint Honorary Secretaries, Dr. A. A. Palmer and Dr. T. W. Lipscomb, or to the secretaries of the sections not later than July 4, 1929, and to place their papers in the hands of the secretaries of sections not later than August 3, 1929. The work of the secretaries of sections will be facilitated by a strict observance of this rule.

#### Entertainment of Visitors.

In regard to the entertainment of lady visitors to Congress, it is requested that all medical practitioners who propose to become members of Congress, will intimate on the forms of application to be sent to the local secretaries whether they will be accompanied by ladies or not, so that satisfactory arrangements may be made.

#### Section of Orthopædics.

The Honorary (local) Secretaries of Congress in each State and New Zealand have been asked for the names of members interested in the Section of Orthopædics and to each members on the lists supplied has been sent an outline of the suggested activities of the Section with a request for suggestions for subjects. The response has been good and the subjects suggested for discussion represent a formidable amount of work for the time available. The list includes *talipes equino-varus*, fixation of the sacro-iliac articulation, bone tuberculosis, non-union of fractures, Perthes's disease, manipulative surgery, static disabilities of the feet, results of treatment of injuries to semilunar cartilages, *talipes calcaneus*.

The Honorary Secretary of the Section, Dr. J. Hoets, 143, Macquarie Street, Sydney, would be glad to hear from any member who has not received a circular, and who has a paper to present, at a very early date, as arrangements must soon be finalized.

#### Accommodation in Sydney.

The attention of members of Congress is directed to a list of hotels and boarding houses in Sydney and the immediate suburbs which was published in the issue of May 4, 1929. As the accommodation in Sydney is limited, members are advised to secure rooms as early as possible. Application should be made direct to the manager of the hotel or boarding house selected.

#### Proceedings of the Australian Medical Boards.

##### VICTORIA.

THE undermentioned have been registered under the provisions of Part I of the *Medical Act*, 1915, of Victoria, as duly qualified medical practitioners:

Altmann, Albert Adolph, M.B., B.S., 1929 (Univ. Melbourne), 10, Charnwood Road, St. Kilda.

Beaumont, Ivy Camille, M.B., B.S., 1929 (Univ. Melbourne), "Rochdale," Carpenter Street, Bendigo.

Bottomley, Edward Eric, M.B., B.S., 1929 (Univ. Melbourne), 177, Cotham Road, Kew.

Carroll, Thomas White, M.B., B.S., 1929 (Univ. Melbourne), 44, Kinkora Road, Hawthorn.

Duncan, Lois Madge, M.B., B.S., 1929 (Univ. Melbourne), 20, Burn Street, Invermay, Launceston.

Gale, Charles Washington, M.B., B.S., 1929 (Univ. Melbourne), 48 Bennett Street, North Richmond.

Gorman, Morris O'Connell, M.B., B.S., 1929 (Univ. Melbourne), 141, Walcott Street, Mt. Lawley, Western Australia.

Henshall, Harding Herbert, M.B., B.S., 1929 (Univ. Melbourne), Rochester.

Jones, John, M.B., B.S., 1929 (Univ. Melbourne), 2A, Princes Street, St. Kilda.

Kefford, Minnie Isobel Wilson, M.B., B.S., 1929 (Univ. Melbourne), 17, Kintore Street, Camberwell.  
 O'Connor, John Mackey, M.B., B.S., 1929 (Univ. Melbourne), 23, Codrington Street, Sandringham.  
 Rountree, Jean Grace, M.B., B.S., 1929 (Univ. Melbourne), Hamilton.  
 Scott, Ian Mitchell King, M.B., B.S., 1929 (Univ. Melbourne), 249, Williams Road, South Yarra.  
 Smith, Leslie, M.B., B.S., 1929 (Univ. Melbourne), 122, Erroll Street, North Melbourne.  
 Stephens, Willem Lodewyk Bosschart, M.B., B.S., 1929 (Univ. Melbourne), The Vicarage, Moorabbin.  
 Watt, Janet Paterson, M.B., B.S., 1929 (Univ. Melbourne), 32, Rochester Road, Canterbury.

#### Additional diplomas registered:

Downie, Ewen Thomas Taylor, M.R.C.P., 1929 (London), M.D., 1929 (Univ. Melbourne).  
 Westacott, Leslie John, M.D., 1929 (Univ. Melbourne).  
 Evans, Cyril Harold Edward William, M.D., 1929 (Univ. Melbourne).  
 Kaye, Geoffrey Alfred, M.D., 1929 (Univ. Melbourne).  
 Tallent, Gordon Murray, M.D., 1929 (Univ. Melbourne).

### Books Received.

DISEASES OF THE GALL BLADDER AND BILE DUCTS, by Everts Ambrose Graham, A.B., M.D., Warren Henry Cole, B.S., M.D., Glover H. Copher, A.B., M.D., and Sherwood Moore, M.D.; 1929. London: Baillière, Tindall and Cox. Royal 8vo., pp. 492, with illustrations. Price: 35s. net.  
 DISEASES OF INFANTS AND CHILDREN, by Henry Dwight Chapin, A.M., M.D., and Lawrence Thomas Royster, M.D.; Sixth Revised Edition; 1928. London: Baillière, Tindall and Cox. Royal 8vo., pp. 690, with illustrations. Price: 30s. net.

### Diary for the Month.

MAY 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.  
 MAY 28.—Illawarra Suburbs Medical Association, New South Wales.  
 MAY 30.—New South Wales Branch, B.M.A.: Branch.  
 MAY 30.—South Australian Branch, B.M.A.: Branch.  
 JUNE 4.—Tasmanian Branch, B.M.A.: Council.  
 JUNE 4.—Eye, Ear, Nose and Throat Section, South Australian Branch, B.M.A.  
 JUNE 5.—Victorian Branch, B.M.A.: Branch.  
 JUNE 5.—Western Australian Branch, B.M.A.: Council.  
 JUNE 6.—South Australian Branch, B.M.A.: Council.  
 JUNE 6.—Section of Medical Literature and History, New South Wales Branch, B.M.A.  
 JUNE 7.—Queensland Branch, B.M.A.: Branch.  
 JUNE 11.—Tasmanian Branch, B.M.A.: Branch.  
 JUNE 11.—New South Wales Branch, B.M.A.: Ethics Committee.  
 JUNE 12.—Central Northern Medical Association, New South Wales.  
 JUNE 13.—New South Wales Branch, B.M.A.: Clinical Meeting.

### Medical Appointments.

Dr. James Alexander Rolland (B.M.A.) has been appointed Honorary Clinical Assistant to the Ophthalmic Department of the Adelaide Hospital, South Australia.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

COMMONWEALTH DEPARTMENT OF HEALTH: Medical Officer.  
 MELBOURNE HOSPITAL, VICTORIA: Honorary Vacancies.  
 RENWICK HOSPITAL FOR INFANTS, SUMMER HILL, SYDNEY: Honorary Physician.  
 THE BRISBANE AND SOUTH COAST HOSPITALS BOARD: Medical Vacancies.

### Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital. Boonah District Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Boomeroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to position at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

### Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.